



ALAGAPPA UNIVERSITY

[ACCREDITED WITH 'A+' Grade by NAAC (CGPA:3 .64) in the Third Cycle
and Graded as Category-I University by MHRD-UGC]
(A State University Established by the Government of Tamilnadu)



KARAIKUDI – 630 003

DIRECTORATE OF DISTANCE EDUCATION

SYLLABUS

Post Graduate

S. NO	SUBJECT	PAGE NO
1)	M.A -Tamil	1
2)	M.A -English	22
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4)	M.A-Sociology	92
5)	M.A-(PM&IR)	142
6)	M.A-(CC& E)	176
7)	Master of Social Work	210
8)	M.A (Economics)	302
9)	M.A(J &MC)	329
10)	M.A (Education)	368
11)	M .Sc- (Mathematics)	415
12)	M. Sc-(Computer Science)	453
13)	M.Sc –(Information Technology)	485
14)	Master of Computer Application(MCA)	519
15)	M.Sc (Chemistry)	568
16)	M.Sc-(Physics)	611
17)	M.Sc- (Botony)	656
18)	M.Sc- (Zoology)	691
19)	M.Sc-(Psychology)	722
20)	M.Sc –(Microbiology)	766
21)	M.A- (Home Science-Nutrition and Dietetics)	797
22)	M.Com	829
23)	M.Com -(Finance & Control)	866
24)	Master of Library and Information Science (M.Lib.I.Sc)	902

M.A Tamil

பருவம்	தாள் எண்	தாள் குறியீட்டு எண்	பாடங்கள்	அக மதிப்பெண்கள்	தேர்வு மதிப்பெண்கள்	மொத்த மதிப்பெண்	மதிப்பீடுகள்
	முதற்பருவம்						
1	1	31911	இக்கால இலக்கியம்	25	75	100	4
	2	31912	அற இலக்கியங்களும் சமய இலக்கியங்களும்	25	75	100	4
	3	31913	இலக்கணம் 1 - தொல்காப்பியம் எழுத்ததிகாரம் இளம்பூரணம்.	25	75	100	4
	4	31914	இலக்கியத் திறனாய்வியல்	25	75	100	4
				100	300	400	16
	இரண்டாம் பருவம்						
2	5	31921	இலக்கணம் 2 - தொல்காப்பியம் சொல்லதிகாரம் சேனாவரையம்	25	75	100	4
	6	31922	தமிழர் பண்பாடும் கலையும்	25	75	100	4
	7	31923	திறனாய்வுக் கோட்பாடு	25	75	100	4
	8	31924	கல்வெட்டியல்	25	75	100	4
				100	300	400	16
	மூன்றாம் பருவம்						
3	9	31931	சங்க இலக்கியங்கள்	25	75	100	4
	10	31932	காப்பியங்கள்	25	75	100	4
	11	31933	சிறுநூல்க்கியங்கள்	25	75	100	4
	12	31934	இலக்கணம் - 3 தொல்காப்பியம் பொருளாதிகாரம் இளம்பூரணம்	25	75	100	4
				100	300	400	16
	நான்காம் பருவம்						
4	13	31941	ஒப்பிலக்கியம்	25	75	100	4
	14	31942	பண்பாட்டு மானிடவியல்	25	75	100	4
	15	31943	தமிழக வரலாறும் பண்பாடும்	25	75	100	4
	16	31944	ஆராய்ச்சி அறிமுகம்	25	75	100	4
				100	300	400	16
	மொத்தம்					1600	64

முதலாமாண்டு முதற்பருவம்

தாள் 31911 - இக்கால இலக்கியம்

மதிப்பெண்: 75+25
மதிப்பீடு : 4

நோக்கம்:

இக்கால இலக்கியங்களைப் பற்றி மாணவர்களுக்கு எடுத்துரைத்தல்

பிரிவு - 1 : கவிதை, புதுக்கவிதை

- கூறு 1 : பாரதியார் - தேசிய கீதங்கள்
கூறு 2 : பாரதிதாசன் - குடும்ப விளக்கு
கூறு 3 : நா. காமராசன் (புதுக்கவிதை) - கருப்பு மலர்கள்
அப்துல் ரகுமான் (புதுக்கவிதை) - இரு பக்கங்கள்
கூறு 4 : அறிவுமதி (புதுக்கவிதை) - இதயம்
ஈரோடு தமிழன்பன் (புதுக்கவிதை) - பச்சை நெருப்பு
கூறு 5 : நா.முத்துக்குமார் (புதுக்கவிதை) - தூர்
தாமரை (புதுக்கவிதை) - ஒரு கதவும் கொஞ்சம் கள்ளிப்பாலும்

பிரிவு - 2: நாடகம், புதினம்

- கூறு 6 : அண்ணாவின் வேலைக்காரி - நாடகம்
கூறு 7 : பிரபஞ்சனின் - முட்டை - புதினம்
ஜெயந்தனின் - நினைக்கப்படும் - புதினம்

பிரிவு - 3: சிறுகதை

- கூறு 8 : புதமைபித்தனின் - சிறுகதை - கடவுளும் கந்தசாமி பிள்ளையும்
ஜெயகாந்தன் - சிறுகதை - தனிமனிதன்
கூறு 9 : தி. ஜானகிராமன் - சிறுகதை - சிலிர்ப்பு
சூரியகாந்தன் - சிறுகதை - ஒரு தொழிலாளியின் டைரி
கூறு 10 : வைரமுத்து - சிறுகதைகள்
ரா. வெங்கடேஷ் - சிறுகதை - கரைந்தவர்கள்

பிரிவு - 4: புனைகதை, உரைநடை

- கூறு 11 : கி.ராஜநாராயணன் (புதினம்) - கோபல்ல கிராமம்
கூறு 12 : அனுராதா ரமணனின் சிறை (புதினம்)
கூறு 13 : உரைநடை - திரு.வி.கவின் முருகன் அல்லது அழகு
கூறு 14 : உரைநடை - வண்ணதாசனின் அகமும் புறமும்

நோக்கம்:

மாணவர்களுக்கு அற இலக்கியங்களைப் பற்றியும் சமய இலக்கியங்களைப் பற்றியும் எடுத்துரைத்து அதன் வழி நடக்க முயற்சி செய்தல்

பிரிவு - 1 : பதினெண்கீழ்க்கணக்கு - அறம் (திருக்குறள்)

- கூறு 1 : திருக்குறள் : அறத்துப்பால் - முதல் மூன்று அதிகாரங்கள்
கூறு 2 : திருக்குறள் : பொருட்பால் - முதல் மூன்று அதிகாரங்கள்
கூறு 3 : திருக்குறள் : காமத்துப்பால் - முதல் மூன்று அதிகாரங்கள்

பிரிவு - 2 : பதினெண்கீழ்க்கணக்கு - அறம் (திருக்குறள் நீங்காலாக)

- கூறு 4 : நாலடியார் : நட்பாராய்தல் கூடா நட்பு
கூறு 5 : பழமொழி : கல்வி, கல்லாதார் , அறிவுடைமை
கூறு 6 : ஔவையார் : நல்வழி (முதல் 20 பாடல்கள்)
கூறு 7 : இன்னா நாற்பது : முதல் பத்து பாடல்கள்
கூறு 8 : இனியவை நாற்பது : முதல் பத்து பாடல்கள்,

பிரிவு - 3 : பக்தி - இடைக்காலம்

- கூறு 9 : காகைக்கால் அம்மையார் : திரு. இரட்டை மணிமாலை - அப்பர்:போற்றித் திருத்தாண்டகம் - சம்பந்தர் : திருநீற்றுப் பதிகம் கோளறு பதிகம் - மணிவாசகர் : சிவபுராணம்.
கூறு 10 : நம்மாழ்வார் : முதல் பத்து - உயர்வு அற என்னும் முதல் திருவாய் மொழியும் வீடுமின்னென்னும் இரண்டாம் திருமொழியும் ஆண்டாள் : திருமணக் கனவை உரைத்தல் வலம்புரிக்குக் கிடைத்த பேறு - குலசேகராழ்வார் : ஊனேறு - திருவேங்கடமுடையான் விஷயம்.

பிரிவு - 4 : பக்தி - பிற்காலம்

- கூறு 11 : பட்டினத்தார் : திருவிடை மருதூர் மும்மணிக்கோவை - திருமூலர் : அறஞ்செய்வான் திறம், அறம் செய்யான் திறம்.
கூறு 12 : தாயுமானவர் : பரிபூரணானந்தம் பாடல்கள் - வள்ளலார் : தெய்வமணி மாலை
கூறு 13 : குணங்குடி மஸ்தான் சாகிபு : பராபரக்கண்ணி
கூறு 14 : தேசிய விநாயகம் பிள்ளை : ஆசிய ஜோதி

தாள் 31913 - இலக்கணம்-1 - தொல்காப்பியம் எழுத்ததிகாரம்
இளம்பூரணம்.

மதிப்பெண்: 75+25
மதிப்பீடு : 4

நோக்கம் :

மொழி மற்றும் எழுத்தின் இலக்கண அமைப்பை பற்றி மாணவர்களுக்கு
கூறுதல்

பிரிவு - 1 : நூல்மரபு, மொழிமரபு

கூறு 1 : நூல் மரபு- மாத்திரை , எண்

கூறு 2 : நூல் மரபு- வடிவு , மயக்கம்

கூறு 3 : மொழி மரபு- சார்பு எழுத்துக்கள் - ஆயுதத்தின் இயல்பு - அளபடை -
எழுத்துக்கள் தொடர்ந்து மொழியாதல்

கூறு 4 : எழுத்துகளின் இயக்கம் - போலி - மொழி முதல் எழுத்துக்கள் - மொழி
இறுதி எழுத்துக்கள்

பிரிவு - 2 : பிறப்பியல், புணரியல், தொகைமரபு

கூறு 5 : பிறப்பியல் - உயிர் எழுத்துக்கள் பிறக்குமாறு - மெய் எழுத்துக்கள்
பிறக்குமாறு - சார்பு எழுத்துக்கள் பிறக்குமாறு

கூறு 6 : புணரியல் - மொழிகளின் முதலும் ஈறும் - புணர்தலின் இயல்பு - உருப்பு
புணர்ச்சி - சாரியைப் புணர்ச்சி

கூறு 7 : எழுத்துச் சாரியை - உயிர் எழுத்தின் புணர்ச்சி இயல்புகள் - உடம்படு
மெய் -புணர்ச்சியின் பொருள் வேறுபடும் இடம்

கூறு 8 : தொகை மரபு - உயிரீறு - மெய்யீறு - உயர்திணைப் பெயர்கள் பற்றிய
புணர்ச்சி

பிரிவு - 3 : உருபியல், உயிர் மயங்கியல்

கூறு 9 : உருபியல் - உயிரீறுகள் - மெய்யீறுகள்

கூறு 10 : உருபியல் - முற்றுகர - குற்றுகர - ஈறுகள் - புறநடை

கூறு 11 : உயிர் மயங்கியல் - அகர,ஆகார,இகர,ஈகர,உகர,ஊகார ஈறுகள்

கூறு 12 : உயிர் மயங்கியல் - எகர,ஏகார,ஐகார,ஓகார, ஔகார ஈறுகள்

பிரிவு - 4 : புள்ளி மயங்கியல், குற்றியலுகரப் புணரியல்

கூறு 13 : புள்ளி மயங்கியல்

கூறு 14 : குற்றியலுகரப் புணரியல்

நோக்கம்:

கலையின் வடிவமும் இலக்கியத்தின் திறனாய்வையும் , கற்பனை பற்றி விளக்கத்தையும் மாணாக்கர்களுக்கு அறிவுறுத்துதல்

பிரிவு - 1 : திறனாய்வும் வகைகளும்

- கூறு 1** : இலக்கியத் திறனாய்வின் இயல்பும் நோக்கமும் - திறனாய்வாளரின் தகுதிகள் - திறனாய்வின் பயன்
- கூறு 2** : இலக்கியக் கல்வி இலக்கியத் திறனாய்வுத் தொடர்புகள் - தொல்காப்பியமும் தமிழ்த் திறனாய்வின் அடிப்படைகளும் - தமிழ்த்திறனாய்வின் வளர்ச்சியும் வரலாறும்
- கூறு 3** : திறனாய்வு வகைகள் - விதிமுறைத்

திறனாய்வு - மதிப்பீட்டு முறை திறனாய்வு

- கூறு 4** : ஒப்பீட்டுமுறைத் திறனாய்வு - பாராட்டுமுறை திறனாய்வு இவற்றை எடுத்துக்காட்டுடன்அறிதல்

பிரிவு - 2 : கற்பனை, உணர்ச்சி

- கூறு 5** : கற்பனை -என்ற சொல்லின் விளக்கமும் ஆட்சியும் - கற்பனை பற்றி அடிசன் வில்லியம்சய்லர். வேர்ட்ஸ் ஓர்த். கோலிரிட்ஜ் . ரிச்சர்ட்ஸ் ஆகியோரின் விளக்கங்கள்
- கூறு 6** : கற்பனையின் வகைகள் - வாழ்க்கையும் கற்பனையும் - இல்லன படைத்தல் - உலகியற் கற்பனை - அல் இயற்கைக் கற்பனை
- கூறு 7** : இலக்கியமும் உணர்ச்சியும் - இலக்கியத்திற்குப் பொருத்தமான நல்ல உணர்ச்சிகள்
- கூறு 8** : இலக்கியம் நெடிது வாழுவதற்குத் தக்க உணர்ச்சிகள் - தொல்காப்பிய மெய்ப்பாடுகள்

பிரிவு - 3 : உணர்ச்சி வடிவம்

- கூறு 9** : கலையும் வடிவமும் - இலக்கியமும் கருத்தும் ஒலிநயத்தின் சிறப்பு
- கூறு 10** : ஒலிநயமும் உணர்ச்சியும் - உணர்ச்சிக்கேற்றபடி வடிவ மாற்றம்
- கூறு 11** : திறனாய்வு : ஐவகைப் பார்வைகள் - அறவியல் - சமூகவியல்

பிரிவு - 4 : இலக்கிய இயக்கம்

- கூறு 12** : உளவியல் - தொல்படிமவியல் - மானிடவியல்
- கூறு 13** : இலக்கிய இயக்கங்கள் - நடப்பியல் - புனைவியல் - செவ்வியல் - ஆகியவற்றைப் பற்றி அறிதல் -
- கூறு 14** : தமிழ்ஆய்வில் பயன்படுத்துதல் - குறியீட்டில் - உருத்தோற்றவியல்

பார்வை நூல்கள்

1. தூ.ஏ.ஞானமூர்த்தி - இலக்கியத் திறனாய்வியல், ஐந்திணைப் பதிப்பகம், சென்னை.
2. மு.வரதராசனார் - இலக்கியத்திறன், பாரி நிலையம், சென்னை.
3. சு.பாலச்சந்திரன் - இலக்கியம் திறனாய்வு, அணியகம், சென்னை.

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|----------------------|--|
| 4. அ.ச.ஞானசம்பந்தன் | - இலக்கியக் கலை, சைவசித்தாந்த நூற்பதிப்புக் கழகம், சென்னை. |
| 5. க.கைலாசபதி | - இலக்கியக் கலை, சைவசித்தாந்த நூற்பதிப்புக் கழகம், சென்னை |
| 6. ந.சஞ்சீவி | - இலக்கிய இயல் அ.கூட்டுறவு எழுத்தாளர் சங்கம், சென்னை |
| 7. தமிழண்ணல் | - நோக்கு, மீனாட்சி பதிப்பகம் |
| 8. க.பஞ்சாங்கம் | - தமிழ் இலக்கியத்திறனாய்வு வரலாறு, செல்வன் பதிப்பகம், புதுவை. |
| 9. குளோரியா (மொ.ஆ) | - இலக்கியக் கொள்கை, பாரி நிலையம், சென்னை. |
| 10. கு.பகவதி(ப.ஆ) | - திறனாய்வு அணுகுமுறைகள், உலகத்தமிழாராய்ச்சி நிறுவனம், சென்னை. |
| 11. ந. பிச்சை முத்து | - திறனாய்வும் இலக்கியக் கொள்கைகளும், வேங்கடரங்கன் பதிப்பகம், சென்னை. |
| 12. தி.சு. நடராஜன் | - திறனாய்வுக் கலை |
| 13. இ.மறைமலை | - இலக்கியமும் சமூகவியலும் |
| 14. பாலா | - சார்லிசம் அன்னம் சிவகங்கை |
| 15. கோ. கேசவன் | - இலக்கியமும் இயக்கப் போக்குகளும் |

முதலாமாண்டு இரண்டாம்பருவம்

தாள் 31921 - இலக்கணம்-2 தொல்காப்பியம் : சொல்லதிகாரம் - சேனாவரையம்

மதிப்பெண்: 75+25
மதிப்பீடு : 4

நோக்கம் :

மாணவர்களுக்குத் தொல்காப்பியத்தின் சொல்லதிகாரங்களைப் பற்றி எடுத்துக் கூறுதல்

பிரிவு 1: கிளவியாக்கம்

- கூறு 1 : கிளவியாக்கம் - வழுவமைதி
கூறு 2 : கிளவியாக்கம் - தொடர்ச்சி
கூறு 3 : வேற்றுமையியல் - முறைவைப்பு
கூறு 4 : வேற்றுமை மயங்கியல்

பிரிவு 2: விளிமரபு – பெயரியல்

- கூறு 5 : விளிமரபு
கூறு 6 : பெயரியல் - சொற்களின் பாகுபாடு –
உயர்திணை
கூறு 7 : அஃறிணை, விரவுப் பெயர்
கூறு 8 : வினையியல் - இலக்கணம் - பாகுபாடு

பிரிவு 3: இடையியல் - உருபுகள்

- கூறு 9 : வினையெச்சம் - தொடர்ச்சி
கூறு 10 : இடையியல் - இலக்கணம் - சாரியை -
இடைநிலை – வேற்றுமை உருபுகள்
கூறு 11 : இடையியல் - அசைநிலை - இசைநிறைச்
சொற்கள் - குறிப்புச் சொற்கள் - உவம
உருபுகள்

பிரிவு 4: உரியியல் - எச்சவியல்

- கூறு 12 : உரியியல் - இசை, குறிப்பு, பண்
கூறு 13 : எச்சவியல்

நோக்கம்:

பண்பாடும் கலையும் நாட்டு வரலாற்றில் முக்கிய இடத்தைப் பெறுவன. இந்திய நாகரிகத்தில் தமிழரின் பண்பாட்டைப் பற்றியும், கலைகளைப் பற்றியும் மாணவர்களுக்கு அறிமுகம்செய்து பண்பாட்டு மாற்றங்களை உணரச்செய்தல்.

பிரிவு 1: சமயம்

- கூறு 1** : சங்க சமய நெறி - சைவ நெறி - தமிழர் பண்பாட்டில் வைணவம் - தமிழர் சமணம்
- கூறு 2** : தமிழர் பண்பாட்டில் இசுலாம் - தமிழர் பண்பாட்டில் கிறித்துவம்
- கூறு 3** : இந்திய நாகரிகத்தில் தமிழர் பண்பாட்டுக் கூறுகள் - ஆங்கில ஆட்சியின் செல்வாக்கு - மராட்டியப் பண்பாடு - பண்பாட்டு ஊடாட்டம்
- கூறு 4** : அழகுக் கலைகள் பற்றிய பொது அறிமுகம் - இசைக்கலை வரலாறு - தொல்காப்பியம் இசைச் செய்திகள்

பிரிவு 2: கலை

- கூறு 5** : சங்க காலம் - பாணர் மரபு - இசைக் கருவிகள் - இசை நூல்கள் - சிலப்பதிகாரம் இசையும் சமணமும் இசையும்
- கூறு 6** : பல்லவர்கால இசை மன்னர்களும் இசையும் - சோழர்கால இசை - பிற்கால இசை - தமிழிசைச் சங்கம் - இசைத்தமிழ் நூல்கள்
- கூறு 7** : கூத்துக் கலை வரலாறு - சங்ககாலம் வள்ளிக்கூத்து குரவை வெறியாட்டு துணங்கை முதலானவை பொருநர் விறலியர் - சிலப்பதிகாரமும் கூத்தம் நாட்டிய மேடை பதினோராடல்
- கூறு 8** : பல்லவர்காலம் முதலான நாடகக் கலை - தொல்காப்பியம் முதலானவற்றில் நாடகச் செய்திகள் - நாடகம் நாட்டியம் எனும் பொருளில் - நான்குவகை நாடகம் - 24 வகை மெய்ப்பாடுகள்

பிரிவு 3: கோயில்கள்

- கூறு 9** : ஆடுகளம் - ஆடுகள அமைவுகள் - 10 நூற்றாண்டு நாடகம் - 19 ஆம் நூற்றாண்டு நாடகம் - நாடக சபைகள் - 20 ஆம் நூற்றாண்டு நாடக வரலாறு
- கூறு 10** : சங்க காலம் - கோயில் கட்டடங்கள் - சிலப்பதிகாரம் , மணிமேகலை , ஆழ்வார்கள் ,நாயன்மார்கள் , காலக் கோயில்கள்

பிரிவு 4: ஓவியம் - சிற்பம்

- கூறு 11** : சங்ககாலம் - சங்ககாலத்தின் பின்னான ஓவியக் கலை - பனைமலை ஓவியம் காஞ்சிபுரம் திருமலைப்புரம் சித்தன்ன வாசல் - தாமரைக்குளம்
- கூறு 12** : சோழர்கால ஓவியம் கயிலைக் காட்சி நாட்டிய நங்கையர் -விசயநகரத்தார் கால ஓவியம் - மதுரை நாயக்கர் கால ஓவியம் - பிற்காலம்
- கூறு 13** : சங்ககால மண்ணீட்டாளர் அகழாய்வும் மண் உருவங்களும் சுதைச் சிற்பங்களும் - பல்லவர்கலைச் சிற்பம் - கற்சிற்பம் - மாமல்லபுரச் சிற்பங்கள் -சோழ பாண்டியர் சிற்பம்
- கூறு 14** : யவணச் சிற்பமும் இந்தியச் சிற்பமும் - நால்வகைச் சிற்பம் - இயற்கை கற்பனை படிமை உருவம் - சிற்பசாத்திரங்கள் - செப்புத் திருமேனிகள்

பார்வை நூல்கள்:

1. சிற்பக் கலை 2003 செ. வைத்தியலிங்கம் மெய்யப்பன் தமிழாய்வகம், சிதம்பரம்.
2. தமிழ் இலக்கியத்தில் மதமும் மானுடமும் 1963 கார்த்திகேசு சிவதம்பி, தமிழ்ப் புத்தகாலயம், சென்னை.
3. தமிழக வரலாறும் மக்களும் பண்பாடும் - 1971, கே.கே.பிள்ளை தமிழ்நாட்டுப் பாடநூல் நிறுவனம், சென்னை.
4. தமிழர் பண்பாடும் வரலாறும், 1997 நா. வானமாமலை நியூ செஞ்சரி புக் ஹவுஸ் பிரைவேட் லிமிடெட், சென்னை.

நோக்கம்:

திறனாய்வின் தோற்றமும் வளர்ச்சியும் மற்றும் உலகஅளவில் பேசப்படும் திறனாய்வுக் கோட்பாடுகள்-இலக்கியங்கள் பற்றித் மாணவர்களுக்கு அறிமுகம் செய்து விளக்குதல்.

பிரிவு 1: திறனாய்வு

- கூறு 1** : இலக்கியக் கோட்பாடு - இலக்கியத் திறனாய்வு
கூறு 2 : இலக்கிய வரலாறு - அறிமுகப்படுத்துதல்
கூறு 3 : புதுத்திறனாய்வு - தோற்றமும் வளர்ச்சியும் - கோட்பாட்டாளர்கள் - புதுத்திறனாய்வுக் கோட்பாடுகள் - புதுத் திறனாய்வும் தமிழ் இலக்கியங்களும்
கூறு 4 : வரலாற்றியல் திறனாய்வு - தோற்றமும் வளர்ச்சியும் - வரலாற்றியல் திறனாய்வும் மார்க்சிய அறிஞர்களும் - இலக்கிய வரலாற்றெழுத்தியல் - இலக்கியத்தை வரலாற்று மூலமாகக் கொணர்தல்

பிரிவு 2: திறனாய்வுக் கொள்கைகள்

- கூறு 5** : மொழியியல் திறனாய்வு - ரேயன் யாக்கப்சன் - சகூர் - மொழியின் புதை புற வடிவம் : ஒப்பிலக்கியத் திறனாய்வு - வரையறை தாக்கக் கோட்பாடு - வரவேற்பு - இணைஉரை - அடிக்கருத்தும் குறிப்புப் பொருளும்
கூறு 6 : சமூகவியல் திறனாய்வு - சமுதாயப் பின்னணி - எதிர்கோள் - சமுதாயச் சித்தரிப்பு - சமுதாய மதிப்பு - சமுதாயச் சிக்கல் : மார்க்சியத் திறனாய்வு
கூறு 7 : இயங்கியல் பொருள் முதல் வாதம் - வரலாற்றுப் பொருள் முதல் வாதம் , உருவம் உள்ளடக்கம் - பிரதிபலிப்புக் கொள்கை - அடித்தளம் - மேல்தளம் , சோசலிச எதார்த்தம்
கூறு 8 : பெண்ணியத் திறனாய்வு - விளக்கம் - வரையறை - தோற்றம் - வளர்ச்சி வகைகள் : தலித்தியத் திறனாய்வு : சொல்விளக்கம் - தோற்றம் வளர்ச்சி - தலித் இலக்கியத் திறன் கொள்கைகள்

பிரிவு 3: மொழி - அமைப்பியல்

- கூறு 9** : உள்பகுப்பாய்வுத் திறனாய்வு : உள்வியல் அணுகுமுறையும் மனப்பகுப்பும் - ஓடியல் மனச்சிக்கல் - யுங் - லக்கான் -: தொன்மத் திறனாய்வு : வகைகள் - தொன்மமும் இலக்கியமும் - தொன்மமும் மொழியும் : அமைப்பியல்
கூறு 10 : மொழிக் கிடங்கு - பேச்சு மொழி - குறிப்பின் - குறிப்பீடு - இணைமுரண் - தாய்ப்பார்வை - காலப்பார்வை : பின் அமைப்பியல் தெரிதாவும் சிதைவிளக்கமும்
கூறு 11 : சகூரும் தெரிதாவும் - லக்கான் - பூக்கோ : பின் நவீனத்தை திறனாய்வு நவீனத்தவம் - பின் நவீனத்துவம் வேறுபாடுகள் - கதையாடல்கள்

பிரிவு 4: திறனாய்வுக் கோட்பாடு

- கூறு 12** : எடுத்துரைப்பியல் திறனாய்வு : எடுத்துரைப்பின் அடிப்படைகள் : கதைமாந்தர் - செயல் - காலம் - நோக்குநிலை – பனுவலும் வாசிப்பும்
- கூறு 13** : பின் காலணித்துவத் திறனாய்வு : தோன்றிய சூழல் - பின் காலணித்துவத் திறனாய்வுக் கோட்பாடுகள் - மாற்று வரலாற்றை உருவாக்குதல் - எட்வர்ட் சையத் - ஹோமிபாபா
- கூறு 14** : புலம் பெயர் இலக்கியத் திறனாய்வு : விளக்கம் - வரையறை – புலப்பெயர்வுக்கான காரணங்கள் - புலம் பெயர் சமூகத்தின் பொதுப் பண்புகள்: சூழலியல் திறனாய்வு : தோற்றம் வரையறை – அமெரிக்காவும் இங்கிலாந்தும் பண்பாடும் இயற்கையும் - அறிவியலும் சூழலியலும் - சூழலியல் அணுகுமுறைகள்.

பார்வை நூல்கள்:

1. தி.சு. நடராசன் திறனாய்வுக் கலை, என.சி.பி.எச் சென்னை.
2. இலக்கிய இயக்கங்கள் 1980, ந.பிச்சமுத்து சக்தி வெளியீடு, சென்னை.
3. Barry Peter, Beginnng theory, Viv Books , New Delhi .2010.
4. இலக்கியத் திறனாய்வியல் 1986, தா.ஏ.ஞானமூர்த்தி ஐந்திணைப் பதிப்பகம், சென்னை.

நோக்கம்:

கல்வெட்டுகளினல் காணப்படும் மொழி அமைப்பினை எழுத்துரைத்தல். கல்வெட்டுகளின் எழுத்துகளும் மற்றும் பயன்பாடுகளும் அதன் மூலம் இக்கால மாணக்கர்களுக்கு முன்னோர்களின் வரலாற்றை எடுத்துரைத்தல்.

பிரிவு 1: கல்வெட்டு

- கூறு 1 : வரலாறு உருவாக்கத்தில் கல்வெட்டுகளின் பங்கு
கூறு 2 : கல்வெட்டுகள் எழுதும் முறை
கூறு 3 : இந்தியக் கல்வெட்டுகளில் காணும் மொழிகள்
கூறு 4 : கல்வெட்டுகளின் தன்மை

பிரிவு 2: தமிழக, இந்தியக் கல்வெட்டுகள்

- கூறு 5 : அசோகர் கல்வெட்டுகள்
கூறு 6 : தமிழகக் கல்வெட்டுகளின் பொதுத்தன்மை
கூறு 7 : இந்தியக் கல்வெட்டாய்வின் வரலாறு
கூறு 8 : தென்னிந்தியக் கல்வெட்டாய்வின் தோற்றமும் வளர்ச்சியும்

பிரிவு 3: காலம்

- கூறு 9 : கல்வெட்டுகளின் காலக்கணிப்பு
கூறு 10 : எழுத்துகளின் தோற்றம்
கூறு 11 : சிந்துவெளி எழுத்துக்கள்

பிரிவு 4: எழுத்துகள் - குறியீடுகள்

- கூறு 12 : பிராமி – கரோஷ்டி – தமிழ் பிராமி – வட்டெழுத்து
கூறு 13 : கிரந்த எழுத்து – தமிழ் எழுத்துகள்
கூறு 14 : குறியீடுகள்

பார்வை நூல்கள்

1. தமிழ் கல்வெட்டியலும் வரலாறும் எ.சுப்பராயலு தமிழ் பல்கலைக் கழகம்.
2. பண்டைத் தமிழ் எழுத்துகள், தி. நா.சுப்பிரமணியன், உலகத் தமிழ் ஆராய்ச்சி நிறுவனம், சென்னை.
3. கல்வெட்டியல், , இரா.நாகசாமி தமிழ்நாடு தொல்பொருள் ஆய்வுத் துறை சென்னை.
4. சங்ககாலப் பிராமி கல்வெட்டுகள் மயிலை சீனி வேங்கடசாமி, சைவ சித்தாந்த நூற்பதிப்புக் கழகம், சென்னை.

இரண்டாமாண்டு மூன்றாம்பருவம்

தாள் 31931 – சங்க இலக்கியங்கள்

மதிப்பெண்: 75+25

மதிப்பீடு : 4

நோக்கம்:

சங்க இலக்கியங்களைப் பற்றியும் ஐவகை நிலங்களைப் பற்றியும் மாணவர்களுக்கு எடுத்துரைத்தல்.

பிரிவு 1: குறிஞ்சி - முல்லை

கூறு 1 : குறிஞ்சிப் பாட்டு

கூறு 2 : முல்லைக் கலி- 1 முதல் 8 வரை

கூறு 3 : முல்லைக் கலி- 9 முதல் 17 வரை

கூறு 4 : ஐங்குறுநூறு : மருதம்

கூறு 5 : அகநானூறு நெய்தல் - 10 முதல் 200 வரை

பிரிவு 2: அகநானூறு - குறுந்தொகை

கூறு 6 : அகநானூறு நெய்தல் - 210 முதல் 400 வரை

கூறு 7 : குறுந்தொகை : பாலைப் பாடல்கள் - 1 முதல் 50 வரை

கூறு 8 : குறுந்தொகை : பாலைப் பாடல்கள் - 51 முதல் 93 வரை

பிரிவு 3: நற்றிணை - பரிபாடல்

கூறு 9 : நற்றிணை : முதல் இருபது பாடல்கள்

கூறு 10 : நற்றிணை : அடுத்த இருபது பாடல்கள்

கூறு 11 : பரிபாடல்கள் : வையப் பாடல்கள்

பிரிவு 4: புறம் - பதிற்றுப்பத்து - ஆற்றுப்படை

கூறு 12 : புறநானூறு : 151 முதல் 200 பாடல்கள் வரை

கூறு 13 : பதிற்றுப்பத்து - ஐந்தாம் பத்து

கூறு 14 : சிறுபாணாற்றுப்படை.

நோக்கம்:

காப்பியங்களின் கதைகளும் அதில் கூறப்பட்டுள்ள சிறப்புச் செய்திகளைப் பற்றியும் மாணவர்களுக்குக் கூறுதல்.

பிரிவு 1: சிலப்பதிகாரம்

கூறு 1 : சிலப்பதிகாரம் - புகார்க் காண்டம் - அறிமுகம் - மனையறம்படுத்த காதை

கூறு 2 : சிலப்பதிகாரம் - புகார்க் காண்டம் - அரங்கேற்றுக் காதை -அந்தி மாலை சிறப்புச்செய்த காதை

கூறு 3 : சிலப்பதிகாரம் - புகார்க் காண்டம் -இந்திரவிழவூரெடுத்த காதை – கடலாடு காதை

கூறு 4 : சிலப்பதிகாரம் - புகார்க் காண்டம் - கானல்வரிக் காதை – வேனிற் காதை

கூறு 5 : சிலப்பதிகாரம் - புகார்க் காண்டம் - கனாத்திறம் உரைத்த காதை - நடுகாண் காதை

பிரிவு 2: மணிமேகலை – சீவகசிந்தாமணி

கூறு 6 : மணிமேகலை : 1 முதல் 7 காதைகள்

கூறு 7 : மணிமேகலை : 8 முதல் 15 காதைகள்

கூறு 8 : சீவக சிந்தாமணி : கோவிந்தையார் இலம்பகம்

பிரிவு 3: பெரியபுராணம் - தேம்பாவணி

கூறு 9 : பெரிய புராணம் : கண்ணப்ப நாயனார் புராணம்

கூறு 10 : வில்லிபாரதம் : கன்னப் பருவம்

கூறு 11 : தேம்பாவணி : முதற்காண்டம் - பால மாட்சி படலம்

பிரிவு 4: சீறாப்புராணம் - நளவெண்பா - வளையாபதி

கூறு 12 : சீறாப்புராணம் : நுபுவத்துக் காண்டம் - உமறு கத்தாபு ஈமான் கொண்ட படலம்

கூறு 13 : நளவெண்பா : சுயம்வர காண்டம் (1 – 45 பாடல்கள்)

கூறு 14 : வளையாபதி

நோக்கம்:

சிறுநிலக்கியங்களைப் பற்றி எடுத்துரைத்தல்.

பிரிவு 1: கலிங்கத்துப்பரணி - சோழன் உலா

கூறு 1 : கலிங்கத்துப்பரணி - பரணி இலக்கணம்

கூறு 2 : கடவுள் வாழ்த்து - கடைத்திறப்பு

கூறு 3 : கலிங்கத்துப்பரணி - காடுபாடியது - கோயில் பாடியது

கூறு 4 : குலோத்துங்கச் சோழன் உலா

பிரிவு 2: நந்திக் கலம்பகம் - தமிழ்விடு தூது

கூறு 5 : நந்திக் கலம்பகம் - சொல் விளக்கம் - பாட்டுடைத் தலைவன் - முதல் 20 பாடல்கள்

கூறு 6 : நந்திக் கலம்பகம்- சொல் விளக்கம்- பாட்டுடைத் தலைவன்- 21 முதல் 45 பாடல்கள்

கூறு 7 : தமிழ்விடு தூது- தூது இலக்கணம் - தூது வரலாறு

கூறு 8 : தமிழ்விடு தூது- தமிழின் தனிச்சிறப்பு - தமிழின் தெய்வீக ஆற்றல்

பிரிவு 3: குற்றாலக் குறவஞ்சி - பிள்ளைத் தமிழ்

கூறு 9 : குற்றாலக் குறவஞ்சி -வசந்தவல்லி

கூறு 10 : குற்றாலக் குறவஞ்சி - குறத்தியிடம் மலைவளம் கேட்டல் முதல் குறிகேட்டல் வரை (66 - 111)

கூறு 11 : மீனாட்சியம்மைப் பிள்ளைத் தமிழ் - பிள்ளைத் தமிழ் இலக்கணம்

கூறு 12 : மீனாட்சியம்மைப் பிள்ளைத் தமிழ் - அம்புலிப் பருவம்

பிரிவு 4: தஞ்சைவாணன் கோவை - முத்தொள்ளாயிரம்

கூறு 13 : தஞ்சைவாணன் கோவை - பாங்கி. மதியுடன்பாடு மட்டும்.

கூறு 14 : முத்தொள்ளாயிரம் (சோழன்).

தாள் 31934 - இலக்கணம் -3 தொல்காப்பியம் : பொருளாதிகாரம்
இளம்பூரணம்

மதிப்பெண்: 75+25
மதிப்பீடு : 4

நோக்கம் :

தொல்காப்பியத்தில் பொருளாதிகாரத்தின் திணைப்பாகுபாடுகளைப் பற்றி
மாணவர்களுக்கு விளக்கிக் கூறல்.

பிரிவு 1: அகத்திணையியல்

- கூறு 1 : அகத்திணையியல் - அறிமுகம் - ஐவகை நிலங்கள்
கூறு 2 : அகத்திணையியல் - பிரிவில் நிகழும் கூற்றுவகைகள்
கூறு 3 : புறத்திணையியல் - அறிமுகம் - திணைவகைகள் - வெட்சித்திணை
கூறு 4 : புறத்திணையியல் - வஞ்சித்திணை - உழிஞைத்திணை

பிரிவு 2: புறத்திணையியல் - களவியல் - கற்பியல்

- கூறு 5 : புறத்திணையியல் - தும்பைத்திணை - வாகைத்திணை
கூறு 6 : புறத்திணையியல் - காஞ்சித்திணை - பாடாண்திணை
கூறு 7 : களவியல்
கூறு 8 : கற்பியல்

பிரிவு 3: பொருளியல் - மெய்ப்பாடு - உவமை

- கூறு 9 : பொருளியல்
கூறு 10 : மெய்ப்பாட்டியல்
கூறு 11 : உவமையியல்

பிரிவு 4: செய்யுளியல் - மரபியல்

- கூறு 12 : செய்யுளியல் - மாத்திரை முதல் களன் வரை
கூறு 13 : செய்யுளியல் - காலம் முதல் இழைபு வரை
கூறு 14 : மரபியல்

இரண்டாமாண்டு நான்காம் பருவம்

தாள் 31941 - ஒப்பிலக்கியம்

மதிப்பெண்: 75+25
மகிப்பீடு : 4

நோக்கம்:

ஒப்பிலக்கியத்தின் தோற்றமும் வளர்ச்சியும் மற்றும் தெக் கோட்பாடுகள் பற்றி எடுத்துக் கூறுதல்.

பிரிவு 1: ஒப்பிலக்கியம்

கூறு 1 : ஒப்பிலக்கியத் தோற்றமும் வளர்ச்சியும்

கூறு 2 : தமிழில் ஒப்பிலக்கிய வளர்ச்சி நிலை

கூறு 3 : ஒப்பீடும் ஒப்பிலக்கியமும்

கூறு 4 : ஒப்பிலக்கியப் பயன்பாடு

பிரிவு 2: ஆய்வுகள் - கோட்பாடுகள்

கூறு 5 : ஒப்பிலக்கிய ஆய்வுகள் - பொதுநிலை

கூறு 6 : அடிக்கருத்தியல் - இலக்கிய வகை - இணை நிலை - தாக்கம்

கூறு 7 : ஒப்பிலக்கிய ஆய்வுப் பரப்பு

கூறு 8 : ஒப்பிலக்கியக் கோட்பாடுகள் - பிரெஞ்சுக் கோட்பாடு

கூறு 9 : அமெரிக்கக் கோட்பாடு -

பிரிவு 3: மொழிபெயர்ப்பு - பிறகலைகள்

கூறு 10 : ஒப்பிலக்கியமும் மொழிபெயர்ப்பும்

கூறு 11 : இலக்கியமும் பிற கலைகளும் - இலக்கியமும் வரலாறும்

பிரிவு 4: பிறதுறைகள் - காலமும் இலக்கியமும்

கூறு 12 : உளவியலும் இலக்கியமும் பிற துறைகளும்

கூறு 13 : இலக்கியமும் அறிவும் - இயற்பியல் கோட்பாடு

கூறு 14 : சார்பியல் கோட்பாடுகள் காலமும் இலக்கியமும்

பார்வை நூல்கள்

1. தமிழண்ணல் ஒப்பிலக்கிய அறிமுகம், மீனாட்சி புத்தக நிலையம், வெளியீடு மதுரை, முதற்பதிப்பு - 1973
2. ம. திருமலை&ச.சீனிவாசன் ஒப்பிலக்கிய கொள்கைகள், கமலாலயம், என்.ஜி.ஓ.காலனி நாகமலை புதுக்கோட்டை
3. க. கைலாசபதி ஒப்பியல் இலக்கியம், பாரி நிலையம், சென்னை
4. வை.சச்சிதானந்தம் ஒப்பிலக்கியம் ஓர் அறிமுகம், ஆக்ஸ்போர்டு யுனிவர்சிட்டி பிரஸ், சென்னை

நோக்கம்:

மானிடரின் பண்பாட்டு நிலை, பண்பாட்டு நிலையில் உயர்ந்து நின்றோர் , மானிடர் வாழ்ந்த நிலையினையும் , வாழவேண்டிய நிலையினையும் அறிதல்.

பிரிவு 1: மானிடவியல்

- கூறு 1 : மானிடவியல் தோற்றமும் வளர்ச்சியும்
 கூறு 2 : சாக்ரடீஸ் - பிளேட்டோ - அரிஸ்டாடில்
 கூறு 3 : புத்தாய்வுக் காலம் - அறிவொளிக்காலம்
 கூறு 4 : இந்தியாவில் மானிடவியல் வளர்ச்சி

பிரிவு 2: மானிடவியல் வகைகள்

- கூறு 5 : உடல்சார் மானிடவியல் - இனவியல் - மானிட உடல் அளவையியல்
 கூறு 6 : மனிதச் சூழலியல் - உளவியல்சார் மானிடவியல்
 கூறு 7 : மொழியியல் பண்பாட்டு மானிடவியல்
 கூறு 8 : மானிடவியலும் களப்பணியும் - களப்பணியில் தரவுகளைப் பெறுதல்

பிரிவு 3: உட்கூறுகள் - பொதுமை

- கூறு 9 : தரவுகளைப் பகுத்து ஆய்தல் - ஒப்பீட்டு முறை
 கூறு 10 : பண்பாட்டின் உட்கூறுகள் - உட்கூறுகளின் தன்மைகள்
 கூறு 11 : பண்பாட்டின் அமைப்பு - பண்பாட்டு பொதுமை

பிரிவு 4: சாதி - நவீனக் கோட்பாடுகள்

- கூறு 12 : பண்பாட்டு ஒரு நடத்தை சார் முறை
 கூறு 13 : தமிழகப்பழங்குடியின் பண்பாட்டு மாற்றம் - இனக்குழு - சாதிகள் - சாதிக்கொள்கைகள்
 கூறு 14 : சாதிபற்றிய நவீனக் கோட்பாடுகள்

பார்வை நூல்கள்

1. கே.ஏ.குணசேகரன் , தமிழக மலையின மக்கள்.
2. தமிழர் மானிடவியல் , பக்தவத்சல பாரதி பதிப்பகம், அடையாளம் குத்தநத்தம் திருச்சி.
3. மானிடவியல் கோட்பாடுகள் , பக்தவத்சல பாரதி பதிப்பகம், அடையாளம் குத்தநத்தம் - 621310, திருச்சி மாவட்டம்.
4. இலக்கிய மானிடவியல் பக்தவத்சல பாரதி பதிப்பகம், அடையாளம் குத்தநத்தம் - 621310, திருச்சி மாவட்டம்.
5. வரலாற்று மானிடவியல் , பக்தவத்சல பாரதி பதிப்பகம், அடையாளம் குத்தநத்தம் - 621310, திருச்சி மாவட்டம்.
6. பாணர் இன வரைவியல், பக்தவத்சல பாரதி பதிப்பகம், அடையாளம் குத்தநத்தம் - 621310, திருச்சி மாவட்டம்.

நோக்கம் :

தமிழகத்தின் வரலாறும் இவற்றில் காணப்படும் பண்பாடும், கலைகளும் , நாகரிகங்களைப் பற்றியும் விளக்கிக் கூறுதல். இலக்கியம், கல்வெட்டு. பட்டயங்கள் வழி பண்டைத் தமிழர் வரலாற்றை அறியச் செய்தல்.

பிரிவு 1: வரலாறு – எல்லைகள்

- கூறு 1** : வரலாறும் நிலபரப்பும் - வரலாற்றின் செல்வாக்கு – பல்வேறு காலங்களில் வரலாறு உண்டாக்கிய நாட்டுப் பிரிவுகள்
கூறு 2 : பழைய கற்காலம் - புதிய கற்காலம் - இரும்புக் காலம்
கூறு 3 : தொல்காப்பியருக்கு முற்பட்ட தமிழர் நாகரிகமும் பண்பாடும் - சங்க காலம் கி.மு.300-கி.பி.300
கூறு 4 : சங்க நூல்களில் வேங்கடம் - சோழர்காலத்தில் வட எல்லை

பிரிவு 2: களப்பிரர், சோழர்கள், பாண்டியர்

- கூறு 5** : மூன்றாம் குலோத்துங்கன் வரை – கிருஷ்ணதேவராயர் காலம் - பல்லவர் வரலாறு - பல்லவர் பற்றிய சான்றுகள்
கூறு 6 : களப்பிரர் - சிம்ம விஷ்ணு – மகேந்திரவர்மன் - குடைவரைக் கோயில்கள் - நரசிம்மவர்மன் - மூன்றாம் நந்திவர்மன்
கூறு 7 : கரிகால் பெருவளத்தான் - கி.மு.மூன்றாம் நூற்றாண்டின் முற்பட்ட சோழர் - கி.மு. முதல் நூற்றாண்டுச் சோழர்
கூறு 8 : சங்க கால அரசியலும் மக்கள் வாழ்க்கையும் - சோழர் எழுச்சி – பெரிய கோவில் - பாண்டியர் வரலாறு – மகாராட்டியர்

பிரிவு 3: சமணம் - பௌத்தம் - இசுலாம் - கிறிஸ்தவம்

- கூறு 9** : சமுதாய வரலாறு – பொருளாதார வரலாறு
கூறு 10 : சமண சமயச் செல்வாக்கு – பௌத்த சமயச் செல்வாக்கு - இசுலாத்தின் செல்வாக்கு கிறிஸ்தவ சமயத் தொண்டு
கூறு 11 : தமிழர் நாகரிகம் – தமிழர் பண்பாடு – கல்வி நிலை

பிரிவு 4: தமிழகக் கலைகள்

- கூறு 12** : தமிழகக் கலைகள் – கட்டிடக் கலை – ஓவியக் கலை – சிற்பக் கலை – அசைக் கலை – நடனக் கலை – நாடகக் கலை – மருத்துவக் கலை
கூறு 13 : காவிரிக் கரை நாகரிகம் - கலைச் சிறப்பு மட்டும் - வைகைக் கரை நாகரிகம் இலக்கியச் சிறப்பு - கலைச் சிறப்பு
கூறு 14 : ஆற்றங்கரைப் பண்பாடு – பெண்ணை நாட்டு நாகரிகம் - பொருளைக் கரை நாகரிக்களம் - நொய்யல் நதி நாகரிகம்

பார்வை நூல்கள்

1. தமிழர் நாகரிகமும் பண்பாடும், அ.தெட்சிணாமூர்த்தி , 1994 ஐந்திணைப் பதிப்பகம், சென்னை.

2. தமிழக வரலாறும் பண்பாடும் , கே.கே.பிள்ளை , 1971 , தமிழ்நாட்டுப் பாடநூல் நிறுவனம், சென்னை.
3. தமிழர் பண்பாடும் வரலாறும் , நா.வானமாமலை , 1997 , நியூசெஞ்சரி பக் ஹவுஸ் பிரைவேட் லிமிடெட், சென்னை.
4. தமிழர் பண்பாடும் வரலாறும் , தெ.பொ. மீனாட்சி சுந்தரனார் , 1999 , நியூசெஞ்சரி பக் ஹவுஸ் பிரைவேட் லிமிடெட், சென்னை.
5. பண்டைத் தமிழர் வாழ்வும் வழிபாடும் , க.கைலாசபதி , 1999 , குமரன் பப்ளிஷர்ஸ், சென்னை.
6. The Early Writing System, Dr. K.Rajan, பாண்டிய நாட்டு வரலாற்றுப் பேரவை, மதுரை-10.
7. பழந்தமிழர் வாழ்வும் வளர்ச்சியும் , சாமி சிதம்பரனார் , 1988 சாமி சிதம்பரனார் இலக்கிய நிலையம் சென்னை.
8. தமிழர் வளர்த்த அழகுக் கலைகள், மயிலை சீனி வேங்கடசாமி 2004 மணிவாசகர் பதிப்பகம்.

நோக்கம்:

ஆராய்ச்சி அறிமுகம் ,ஆய்வின் வகைகள் மற்றும் புறக்கட்டுப்பாட்டின் அமைப்புபற்றி விளக்குதல்

பிரிவு 1: ஆய்வு - ஆய்வாளர் - ஆய்வேடு

கூறு 1 : ஆய்வும் ஆய்வேடும் வகைகள்

கூறு 2 : ஆய்வும் ஆய்வுப் பொருள் தேர்வும்

கூறு 3 : ஆய்வாளருக்குரிய தகுதிகள்- ஆய்வுக் குரிய காலம்

கூறு 4 : ஆய்வு நோக்கினைச் சுட்டல் - ஆய்வுச் சிக்கல் - ஆய்வுப் பொருள் பற்றிச் செய்யப்பட்ட ஆய்வுகள்

பிரிவு 2: கூறுகள் - அணுகுமுறைகள்

கூறு 5 : முதன்மைக் கூறுகள் - துணை நிலைக் கூறுகள்

கூறு 6 : தொகுத்தல் - பகுத்தல் - உற்றுநோக்கல்

கூறு 7 : உற்று நோக்குவாரின் அணுகுமுறைகள்

கூறு 8 : நேர்காணல் - நேர்காணலின் வகைகள் - வினாத் தொகுதி

பிரிவு 3: ஆய்வேடு - உருவாக்கம்

கூறு 9 : மாதிரிகள் - கள ஆய்வுக்குத் தேவையான பொருட்கள்

கூறு 10 : எழுத்து - பட ஆதாரங்கள் - திரைப்படம் - ஒலிப்பதிவு - ஒளிப்பதிவு

கூறு 11 : ஆய்வேட்டின் உருவாக்கம் - ஆய்வேட்டின் அமைப்பு

பிரிவு 4: இயல்பிரிப்பு - கருத்து விளக்கம் - புறக்கட்டமைப்பு

கூறு 12 : பகுதிகள் - இயல் பிரிப்பு - கருத்து விளக்கம்

கூறு 13 : ஆய்வேட்டின் புறக்கட்டமைப்பு - பின்னிணைப்பு

கூறு 14 : மேற்கோள் - அடிக்குறிப்பு - துணை நூல் பட்டியல்

பார்வை நூல்கள்

1. ஆய்வியல் அறிமுகம், தமிழண்ணல் , டாக்டர் எஸ்.எஸ். இலக்குவன் , 1979 மீனாட்சி புத்தக நிலையம் , மதுரை.
2. ஆராய்ச்சி முறைகள், முனைவர் எச். சித்திரபுத்திரன் , முனைவர். ஆ.சண்முகம்.
3. இலக்கிய ஆராய்ச்சி நெறிமுறைகள் ,டாக்டர் வேங்கடராமன் ,டாக்டர். முத்துச் சண்முகம், 1985 முத்துப்பதிப்பகம் , மதுரை.
4. ஆய்வியல் நெறிமுறைகள் , டாக்டர் .கு.வெ. பாலசுப்பிரமணியன்.
5. நாட்டார் வழக்காறுகள் , தே.லூர்து.
6. நாட்டார் வழக்காற்றில் கள ஆய்வு, தே.லூர்து

M.A –(ENGLISH)

Sl. No.	Course Code	Title of the Course	CIA Max.	ESE Max.	TOT Max.	C Max.
FIRST YEAR						
I Semester						
1.	32011	Poetry	25	75	100	4
2.	32012	Prose	25	75	100	4
3.	32013	Drama	25	75	100	4
4.	32014	Literary Criticism	25	75	100	4
		Total	100	300	400	16
II Semester						
5.	32021	New Media and Advertising	25	75	100	4
6.	32022	Shakespeare	25	75	100	4
7.	32023	Fiction	25	75	100	4
8.	32024	Comparative Literature and Translation	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III Semester						
9.	32031	British Literature -I	25	75	100	4
10.	32032	Indian Literature in English Translation	25	75	100	4
11.	32033	English for Communication	25	75	100	4
12.	32034	Advanced English Grammar and Usage	25	75	100	4
		Total	100	300	400	16
IV Semester						
13.	32041	British Literature -II	25	75	100	4
14.	32042	American Literature	25	75	100	4
15.	32043	Introduction to Linguistics	25	75	100	4
16.	32044	English Language Teaching - Theory and Practice	25	75	100	4
		Total	100	300	400	16

e. 2. Detailed Syllabi:

FIRST SEMESTER

Course Code	Title of the Course
32011	POETRY

Learning objectives:

1. To familiarize the students with the poetry works of select writers in English.

BLOCK I : POETRY I - IV

Unit – I	Edmand Spenser	: Prothalamion
	John Donne	: i. The Canonization, ii. The Sun Rising
Unit – II	John Milton	: Paradise Lost - Book II
	John Dryden	: Mac Flecknoe
	William Blake	: i. Holy Thursday, ii. The Lamb, iii. –The Tiger
Unit – III	William Wordsworth	: Tintern Abbey
	John Keats	: Ode on a Grecian Urn
Unit – IV	Alfred Tennyson	: The Lady of Shalott
	Robert Browning	: My Last Duchess

BLOCK II : POETRY V - VII

Unit – V	Matthew Arnold	: The Scholar Gipsy
	W.B. Yeats	: i. Byzantium, ii. Sailing to Byzantium
Unit – VI	T.S. Eliot	: The Waste Land
	R.W. Emerson	: i. Brahma, ii. Terminus
	Emily Dickinson	: i. My life Closed Twice Before it's Close ii. Success is counted sweetest...’’ iii. The Soul Selects Her Own Society iv. I heard a Fly buzz –when I died...’’

Unit – VII Robert Frost : Birches
 Wallace Stevens Langston : Sunday Morning
 Hughes : i. The Weary Blues, ii. Dream variations

BLOCK III : POETRY VIII - XI

Unit – VIII Denise Levertov : i. A marigold from North Vietnam,
 ii. Advent 1966
 Sylvia Plath : Lady Lazarus
Unit – IX Nissim Ezekiel : i. The Company I Keep
 ii. Poet, Lover, Birdwatcher
 iii. Night of the Scorpion
 A.K. Ramanujan : i. Snakesii. A River
 Kamala Das : i. The Old Playhouse
 ii. The Freaks
Unit – X Jayant Mahapatra : i. The Twenty- fifth Anniversary of a
 Republic: 1975
 ii. Waiting Fulfilment
 Keki N. Daruwalla : On the Contrariness of Dreams
Unit – XI A.J.M. Smith : i. A Hyacinth for Edith
 ii. The Lonely
 Land Marpaaret Ondaatje : The Time
 around Scars
 A.D. Hope : i. Australia
 ii. Moschus Moschiferus
 iii. Song for St. Cecilia’s Day

BLOCK IV: POETRY XII - XIV

Unit – XII Derek Walcott : i. Ruins of a Great House
 ii. A Sea-Chantey
 Vincent O’s Sullivan : i. Elegy for a
 Schoolmate
 ii. The children
Unit – XIII Wole Soyinka : i. Telephone Conversation

Unit – XIV Jean Arasanayagam ii. Dedication
: In the Month of July

References:

1. Palgrave's *Golden Treasury*. New Delhi: Oxford & IBH.
2. Irmsher, William F. *The Holt Guide to English*, New York: Holt, Rinehart.
3. Barry, Peter, *Beginning Theory*, London: Routledge.
4. Harland, *Literary Theory from Plato to Barthes*, Routledge.
5. Douglas, Arkins G & Marrow, Laura. *Contemporary Literary Theory*
New York: Macmillan.

FIRST SEMESTER

Course Code	Title of the Course
32012	PROSE

Learning objective:

1. To familiarize the students with the prose works of select writers in English.

BLOCK I: PROSE I - IV

Unit – I Francis Bacon : Of Truth – Of Ambition – Of Revenge –
Of Superstition

Unit – II Johnson : Life of Milton

Unit – III Addison and Steele : The Coverley Papers from the Spectator

Unit – IV Charles Lamb : New Year's Eve – The Praise of Chimney-
Sweepers – The South-Sea House

BLOCK II: PROSE V - VIII

Unit – V Dream Children : A Reverie

Unit – VI Carlyle : Dante and Shakespeare

Unit – VII George Orwell : Why I Write

Unit – VIII Will Durant : The Conditions of Civilization

BLOCK III: PROSE IX - XI

Unit – IX Emerson : Self-Reliance

Unit – X Thoreau : Civil Disobedience

Unit – XI Ngugi WA Thiong'o : Decolonising the Mind

BLOCK IV: PROSE XII - XIV

Unit – XII Russell : Open Letter to Eisenhower and Khrushchev

Unit – XIII Stephen Leacock : The Financial Career

Unit – XIV Robert Lynd : Forgetting

A.G. Gardiner : On Umbrella Morals

References:

1. Hugh Walker - English Essay and Essayist.
2. Ivor Evans - History of English Literature.
3. Johnson - Life of Milton Ed. by K. Deighton.
4. Critical History of English Literature, Davin Daiches (Volume-III).
5. Palgrave's *Golden Treasury*. New Delhi: Oxford & IBH.
6. *American Literature*. Volume 2, Ed. William E.Cair. Newyork: Penguin Academics 2004.

FIRST SEMESTER

Course Code	Title of the Course
32013	DRAMA

Learning objective:

1. To make the students appreciate the dramatic Techniques used by select English dramatists.

BLOCK I: DRAMA I - IV

- Unit – I** Drama : Introduction- Objective - Concepts
- Unit – II** Sophocles : Oedipus Rex
- Unit – III** Ibsen : The Doll’s House
- Unit – IV** Marlowe : Dr. Faustus

BLOCK II: DRAMA V - VIII

- Unit – V** Goldsmith : She stoops to conquer
- Unit – VI** Pinter : The Birthday Party
- Unit – VII** T. S. Elliot : The Cocktail Party
- Unit – VIII** Arthur Miller : All my sons

BLOCK III: DRAMA IX - XI

- Unit – IX** George Ryga : The Ecstasy of Rita Joe
- Unit – X** Girish Karnad : Tughlaq
- Unit – XI** Tendulkar : Silence! The Court is in Session

BLOCK IV: DRAMA XII - XIV

- Unit – XII** Girish Karnad : Hayavadana
- Unit – XIII** Tennessee : Cat on a Hot Tin Roof
- Unit – XIV** Sheridan : The School of Scandal

References:

1. Goldsmith – She Stoops to Conquer.
2. Williams, Raymond: Drama from Ibsen to Eliot, Penguin Books, Harmondsworth, 1964.
3. J.L. Styan; The Elements of Drama.

FIRST SEMESTER

Course Code	Title of the Course
32014	LITERARY CRITICISM

Learning objectives:

1. To provide the learners a knowledge of critical theories and practice of literary criticism so as to enable them to appreciate the imaginative literature in a better light.
2. To provide students of post-graduate classes with a brief historical survey of the state of criticism of the present time.
3. To make them familiar with the significant texts illustrating the different theoretical approaches.

BLOCK I: CRITICISM I - IV

Unit – I Aristotle : Poetries (English Translation by S.H Butcher, Aristotle's Theory of poetry and Fine Art, Macmillan, 1932)

Unit – II Philip Sidney : An Apology for Poetry

Unit – III William Wordsworth : Preface to Lyrical Ballads

Unit – IV Matthew Arnold : The Study of Poetry

BLOCK II: CRITICISM V - VII

Unit – V T.S. Eliot : Tradition and the Individual Talent

Unit – VI Edgar Allan Poe : The philosophy of Composition

Sri Aurobindo : The Word and the Sprit

Unit – VII C.G. Jung : Psychology and Literature

Lionel Trilling : Freud and Literature

Unit – VIII Northrop Frye : The Archetypes of Literature

BLOCK III: CRITICISM IX - XI

Unit – IX Harold Bloom : The Breaking of Form

Unit – X Roland Barthes : Criticism as Language

Unit – XI Jacques Derrida : Structure, Sign, and Play in the Discourse

BLOCK IV: CRITICISM XII - XIV

Unit – XII Mark Schorer : Technique as Discovery

Unit – XIII Elaine Showalter : Towards Feminist Poetics

Unit – XIV Linda Hutcheon : Eruptions of postmodernity:
The postcolonial and the Ecological

References:

1. S. Sethuraman Ramasamy “The Literary Criticism” Vol. I & II. Macmillan India Ltd.
2. Lodge, David. Twentieth Century Literary Criticism.
3. Lodge, David. Twentieth Century Literary Criticism.
4. Scott, Wilbur. Five Approaches to Literature.
5. Culler, Jonathan. Critical Theory.
6. Lodge, David. Modern Criticism and Theory.

SECOND SEMESTER

Course Code	Title of the Course
32021	NEW MEDIA AND ADVERTISING

Learning objective:

1. To make the students familiarize with the concepts and uses of New Media and Advertising.

BLOCK I: COMPUTER AND OPERATING SYSTEM

Unit - I Introduction to Computers - Role of Information Technology in Communication

Unit – II Characteristics of Computers i/o systems – Operating system

Unit – III DOS, Windows – Principle Features of Windows - Types

Unit – IV Introduction to Word Processing Software – MS Word – Excel – Access – Power point – Adobe Photoshop

BLOCK II: NETWORK, HARDWARE AND SOFTWARE

Unit – V Growth of Computer networks and World Wide Web – Administration – Commerce and publishing through new media – Media convergence.

Unit – VI Introduction to Websites and Web pages

Unit – VII Features of a typical website – Tools for new media

Unit – VIII Hardware and Software – Glossary of terms associated with websites

BLOCK III: ONLINE COMMUNICATION

Unit – IX E-mail and Internet – Network protocols – Mailing lists – Search engines, browsers, Plug-ins and fonts, News groups – Internet relay chat

Unit – X Teleconferencing -Video conferencing – Accessing references on the Internet.

BLOCK IV: MEDIA AND USAGES

Unit – XI Conventions of writing for New Media, Styles, Presentation, Newsfeeds, Hyperlinks, VRMLs, Linkage to original sources of news and background information

Unit – XII Public Relation and Advertisement through New Media

Unit – XIII Working with Graphics, Images, Streaming Audio and Video, Ethical issues, Regulation mechanisms

Unit – XIV Multimedia Usages- Influences on social behaviour - Future trends

References:

1. Silberschatz, Abraham (1994). *Operating System Concepts, Fourth Edition*. Addison-Wesley.
2. Linz, Peter (1990). *An Introduction to Formal Languages and Automata*. D. C. Heath and Company.
3. Akhter, Shameem (2006). *Multi-Core Programming*. Richard Bowles.
4. Tanenbaum, Andrew S. (1990). *Structured Computer Organization, Third Edition*. Prentice Hall.
5. Akhter, Shameem (2006). *Multi-Core Programming*. Richard Bowles. (Intel Press).

SECOND SEMESTER

Course Code	Title of the Course
32022	SHAKESPEARE

Learning objectives:

1. To provide the students a first-hand knowledge of the plays of Shakespeare and to create in them an awareness of the genius of Shakespeare as a playwright.
2. To help the students understand the distinctiveness of Shakespeare's plays with special reference to the immortal characters he created, his intuitive understanding of human nature and the greatness of his craftsmanship.
3. To make students understand the magnitude of the Shakespearean world.

BLOCK I: STUDIES IN SHAKESPEARE'S WORK

Unit - I - Life and Works of Shakespeare

Unit – II - The Elizabethan Audience and Theatre

Unit – III - Shakespearean Comedy – Classical –Romantic

Unit – IV - Shakespearean Tragedy

Unit – V - Shakespeare's Historical Plays

BLOCK II: PLAYS I

Unit – VI - Twelfth Night

Unit – VII - Much ado about nothing

Unit – VIII - Henry IV Part I

BLOCK III: SHAKESPEARE'S CHARACTERS

Unit – IX - Shakespeare's Character – Marcus Antony

Unit – X - Shakespeare's Character – Cleopatra

Unit – XI - Shakespeare's Character – Enobarbus

BLOCK IV: PLAYS II

Unit – XII - Hamlet

Unit – XIII - Othello

Unit – XIV - Tempest

References:

1. A.C. Bradley: Shakespearean Tragedy.
2. H. Granville-Barker: Preface to Shakespeare.
3. E.M.W. Tillyard: Shakespeare's Last Plays.
4. B. Evans: Shakespeare's Comedies.
5. E.K. Chambers: Shakespeare: A Survey.
6. K. Muir: Shakespeare: The Comedies.

Course Code	Title of the Course
32023	FICTION

Learning objective:

1. To introduce the learners to varied aspects of modern fiction.

BLOCK I: FICTION I - V

Unit – I Charles Dickens : A Tale of Two Cities

Unit – II Charlotte Bronte : Jane Eyre

Unit – III D.H. Lawrence : Sons and Lovers

Unit – IV James Joyce : Ulysses

Unit – V Hawthorne : The Scarlet Letter

BLOCK II: FICTION XI - IX

Unit – VI Ernest Hemingway : A Farewell to Arms – Book I & II

Unit – VII Ernest Hemingway : A Farewell to Arms – Book III & V

Unit – VIII Dostoesvsky : Crime and Punishment – Chapter I to III

Unit – IX Dostoesvsky : Crime and Punishment – Chapter IV to VI

BLOCK III: FICTION X - XII

Unit – X Gunter Grass : The Tin Drum

Unit – XI Margaret Atwood : Surfacing

Unit – XII Patrick White : Voss

BLOCK IV: FICTION XIII - XIV

Unit – XIII Oliver Goldsmith : The Vicar of Wakefield

Unit – XIV Jane Austen : Emma

References:

1. Farner, Geir (2014). Literary Fiction: The Ways We Read Narrative Literature. Bloomsbury Publishing USA.
2. Jones, Oliver. (2015). "Why Fan Fiction is the Future of Publishing." The Daily Beast. The Daily Beast Company LLC.
3. Milhorn, H. Thomas. (2006). Writing Genre Fiction: A Guide to the Craft. Universal Publishers: Boca Raton.

SECOND SEMESTER

Course Code	Title of the Course
32024	COMPARATIVE LITERATURE AND TRANSLATION

Learning objectives:

1. To expose students to the different categories of Comparative Literature.
2. To enable students understand other Schools of Comparative Literature.
3. To introduce students the genre of Comparative Literature.
4. To make them familiar with various aspects of the world literature tracing out from Aristotle to 20th century.
5. To help students understand Comparative Literature in relation to National, World and General Literature.

BLOCK I: INTRODUCTION TO COMPARATIVE LITERATURE

Unit – I Nature of the term Comparative Literature - Definition -Scope

Unit – II Comparative Literature – History - Nature

Unit – III National Literature

Unit – IV General Literature

Unit – V World Literature – French and American Schools

Unit – VI Relevance of Comparative Literature in India

BLOCK II: INFLUENCE AND RECEPTION STUDIES

Unit – VII Literary Genres – Weisstein’s approach to Genre Studies

Unit – VIII Influence and Motivation – Period, age, epoch, school and movement

Unit – IX Reception Studies – epoch, period, generation, movement and terminology

BLOCK III: TRANSLATION STUDIES

Unit – X The Study of Translation – History - Objectives

Unit – XI A theory of Literary Translation

Unit – XII Adaptation- Abridgement – Literary Vs Literary rendering

BLOCK IV: LITERATURE – OTHER DISCIPLINE

Unit – XIII Literature and other arts – Music, Architecture, Theatre and dance **Unit –**

XIV Other discipline – Psychology, Biography, Philosophy and Sociology **References:**

1. Amiya Dev and Shivkumar Das Ed. : *Comparative Literature: Theory and Practice.*
2. C.R. Visweswara Rao & R.K. Dhawan : *Comparative Indian Literature.*
3. Chandra Mohan: *Aspects of Comparative Literature: Current Approaches.*
4. P. Newton Stallknech & M.M. Remak : *Comparative Literature: Methods And Perspectives.*
5. Ulrich Weistein: *Comparative Literature and Literary Theory.*
6. Jan Brandt Corstice: *Introduction to the Comparative Study of Literature.*
7. R.Wellek & A.Warren : *Theory of Literature.*
8. W.Friederich and D.Malone : *Outline of Comparative Literature.*

THIRD SEMESTER

Course Code	Title of the Course
32031	BRITISH LITERATURE -I

Learning objectives:

1. To provide the students a first-hand knowledge of the literary works of the period.
I.e. from Chaucer to 1660.
2. To introduce the students to the political, economic, social and intellectual background so as to enable them to study the works as representatives of this period.
3. To introduce the students to the political, economic, social and intellectual background so as to enable them to study the works as representatives of this period.

BLOCK I: POETRY - I

Unit – I Geoffrey Chaucer : Prologue to the Canterbury Tales
(The first five portraits only – The Knight, The Squire, The Yeoman, The Prioress and The Monk)

Unit – II Edmund Spenser : Prothalamion and Epithalamion

Unit – III John Donne : The Good Morrow, A Valediction: Forbidding Mourning, Death be Not Proud

BLOCK II: POETRY - II

Unit – IV Andrew Marvell : To His Coy Mistress, the Garden

Unit – V George Herbert : The Pulley, Virtue

Unit – VI Alexander Pope : An Epistle to Dr. Arbuthnot

BLOCK III: PROSE

Unit – VII Thomas More : Utopia

Unit – VIII The Bible : Gospel According to St. Mark
(King James)

Unit – IX Francis Bacon : Of Truth, Of Death, Of Parents and Children, Of Marriage and Single Life, and Of Studies

Unit – X Jonathan Swift : The Battle of the Books

BLOCK IV: DRAMA AND FICTION

Unit – XI Thomas Kyd : The Spanish Tragedy

Unit – XII Christopher Marlowe: Dr. Faustus

Unit – XIII Sheridan : School for Scandal

Unit – XIV Oliver Goldsmith : The Vicar of Wakefield

References:

1. A.W. Pollard Ed. The Prologue.
2. H.S.V. Jones. A Spenser Handbook.
3. C.S.L. Lewis. English Literature of the 16th Century.
4. James Reeves. Selected Poems of John Donne.
5. Helen Gardner. The Metaphysical Poets.
6. Grierson's. Introduction to the Metaphysical Poetry.
7. Douglas Bush. English Literature in the Earlier 17th Century.
8. Hansford J.H. A Bacon Handbook.
9. Collins. More's Utopia.
10. Poiriers. Christopher Marlowe.
11. Allardyce Nicoll. British Drama.
12. Sampson. Cambridge History of English Literature Vol. VI.
13. G.M.Trevelyan. Social History of England.
14. E. Sitwell. Alexander Pope.
15. A. Roper. Dryden's Poetic Kingdoms.
16. R.M. Wardle. Oliver Goldsmith.
17. Palgrave's *Golden Treasury*. New Delhi: Oxford & IBH.

THIRD SEMESTER

Course Code	Title of the Course
32032	INDIAN LITERATURE IN ENGLISH TRANSLATION

Learning objectives:

1. To introduce the students to English translation of Indian Literature of writers like Neela Padmanabhan, Bhavabhuti, and K. Sachidanandam etc.
2. To offer them an opportunity to read and enjoy the literary works of great writers of the world.

BLOCK I: NOVEL - I

Unit – I	Neela Padmanabhan	: Generations -Chapter I to X
Unit – II		: Generations -Chapter XI to XX
Unit – III		: Generations -Chapter XXI to XXX
Unit – IV	Ashapurana Debi	: Subarnalata- Chapter I to X

BLOCK II: NOVEL - II

Unit – V		: Subarnalata- Chapter XI to XXI
Unit – VI	Bhalchandra Nemade	: Cocoon
Unit – VII	Rajee Seth	: Unarmed

BLOCK III: DRAMA

Unit – VIII	Bhavabhuti	: Malati and Madhava – Men Characters
Unit – IX		: Malati and Madhava – Women Characters
Unit – X	Chandrasekhar Kamkar	: Sambasiva – A Farce-Chapter I to IV
Unit – XI		: Sambasiva – A Farce-Chapter V to IX

BLOCK IV: POETRY

Unit – XII	K. Sachidanandam	: The Rights of the Earth
Unit – XIII	Nikileswarar	: The Black Flag in the hands of Ambedkar
Unit – XIV	Srikant Varma	: The Pleasure Dome

References:

1. Chaudhuri, Amit, ed. 2001. *The Picador Book of Modern Indian Literature*, London: Picador.
2. Dharwadker, Vinay and Ramanujan, A.K., eds. 1996. *The Oxford Anthology of Modern Indian Poetry*, New Delhi: Oxford UP.
3. Guha, Ranajit, ed. 2005. *Subaltern Studies V*, New Delhi: Oxford UP.
4. Mehrotra, Arvind Krishna, ed. 2003. *An Illustrated History of Indian Literature in English*, New Delhi.
5. Ramanujan, A.K. 1985. *Poems of Love and War*, New Delhi: Oxford UP.
6. Rahman, Anisur. 2002. “*Paradigms of Empowerment and the College of Fort William*”.
7. Sattar, Arshia. 2003. “Translations into English.” In *An Illustrated History of Indian Literature in English*, New Delhi.
8. Sen, Amartya. 2005. *The Argumentative Indian*, London: Allen Lane.
9. University Grants Commission. 2001. *Model Curriculum: English and Other Western Languages*, New Delhi: University Grants Commission.

THIRD SEMESTER

Course Code	Title of the Course
32033	ENGLISH FOR COMMUNICATION

Learning objective:

1. To offer them an opportunity to read different types of Communication activities.

BLOCK I: NATURE AND IMPORTANCE OF COMMUNICATION

Unit – I Linguistic Communication – Importance of communication

Unit – II Patterns of Communication **Unit –**

III Management of Communication

Unit – IV Barriers to Communication

BLOCK II: NON VERBAL COMMUNICATION AND INTERVIEW

Unit – V Non-Verbal Communication – Personal appearance – Posture – Gestures
– Facial expression – Eye contact – Spare distancing

Unit – VI Face to face Conversation – Telephonic Conversation

Unit – VII Interviews – Instruction – Dictation

BLOCK III: MEETINGS, SEMINARS AND CONFERENCES

Unit – VIII Meetings - Purpose and Procedure

Unit – IX Chairmanship – Participation – Physical arrangements

Unit – X Seminars and Conferences – Group Discussion

Unit – XI Audio – Visual aids – Types and Uses

BLOCK IV: REPORT AND RESEARCH WRITING

Unit – XII Report Writing – Preparation of Technical proposals – Business Correspondence

Unit – XIII Preparation of Notices, Agenda and Minutes – Handbooks and Manuals

Unit – XIV Research Papers and Articles – Use of Graphic aids

References:

1. R. Babcock & B. Du-Babcock (2001). *Language-based communication zones in international business communication*.
2. D. Belcher (2009). *English for Specific Purposes in theory and practice*. Ann Arbor, MI: University of Michigan Press.
3. S. Bremner (2006). Politeness, power and activity systems: Written requests and multiple audiences in an institutional setting. *Written Communication*.
4. A. Freedman, C. Adam & G. Smart (1994). Wearing suits to class: Simulating genres and simulations as genres. *Written Communication*.
5. J. Forman (2004). Opening the aperture: Research and theory on collaborative writing.

THIRD SEMESTER

Course Code	Title of the Course
32034	ADVANCED ENGLISH GRAMMAR AND USAGE

Learning objectives:

1. To help students understand how grammatical structures are systematically related to meaning.
2. To enable to understand the basic of grammar.
3. To give practice in clause analysis.
4. To enable students write correct English.

BLOCK I: BASIC GRAMMAR - I

Unit – I - Parts of speech

Unit – II - Noun Phrases **Unit**

– III - Adjective Phrases

Unit – IV - Adverbial Phrases

BLOCK II: BASIC GRAMMAR - II

Unit – V - Prepositions

Unit – VI - Concord

BLOCK III: VOICE AND TENSE

Unit – VII - Tenses

Unit – VIII - Active and Passive Voice

BLOCK IV: SENTENCE PATTERN

Unit – IX - Degrees of Comparison

Unit – X - Noun Clause, Adjective clause, Adverbial I Clause

Unit – XI - Simple, Complex and Compound Sentences

Unit – XII - Kinds of Sentences – Transformation of Sentences

Unit – XIII - Synthesis of sentences

Unit – XIV - Clause Analysis

References:

1. Barbara Strong - *Modern English Structure*
2. Palmer - *Grammar*
3. N.Krishnaswamy - *Modern English: A Book of Grammar Usage & Composition*
4. F.T. Wood - *Remedial English Grammar.*
5. Boulton, Marjorie, *The Anatomy of Prose.* London: Routledge & Paul, 1954.
6. Weston. Anthony. *A Rulebook for Arguments.* Indianapolis: Hackett Pub, 2009.

FOURTH SEMESTER

Course Code	Title of the Course
32041	BRITISH LITERATURE -II

Learning objectives:

1. To provide the students a first-hand knowledge of the great literary works of the Romantic and Victorian Periods.
2. To acquaint the students with the Romantic Movement and also make them understand the political, economic, social and intellectual background of the Victorian Age.

BLOCK I: POETRY - I

- Unit – I** - William Wordsworth : Tintern Abbey
Unit – II - S.T. Coleridge : Kubla Khan
Unit – III - John Keats : Ode on a Grecian Urn
Unit – IV - P.B. Shelley : Ode to the West Wind

BLOCK II: POETRY - II

- Unit – V** - Robert Browning : My Last Duchess
Unit – VI - Dante Gabriel Rossetti : The Blessed Damozel
Unit – VII - Tennyson : Ulysses
Unit – VIII - Arnold : Dover Beach

BLOCK III: PROSE

- Unit – IX** - Charles Lamb : Dream Children: A Reverie,
Chimney Sweepers, Upon a Roasted Pig
Unit – X - Carlyle : Hero as Poet: Shakespeare and Dante
Unit – XI - Ruskin : Sesame

BLOCK IV: FICTION

Unit – XII - Jane Austen : Emma

Unit – XIII - Walter Scott : Kenilworth

Unit – XIV - Dickens : A Tale of Two Cities

References:

1. C.M. Bowra. The Romantic Imagination.
2. H. Darbishire. The Poet Wordsworth.
3. E. Blunden. Shelley.
4. J. Cornwell. Coleridge Poet and Revolutionary.
5. R. Gittings. John Keats.
6. A.H. Wright. Jane Austen's Novels.
7. E. Blunden. Charles Lamb and His Contemporaries.
8. Pope Hennessey. Sir Walter Scott.
9. O. Elton. A Survey of English Literature 1830-1880.
10. F.L. Lucas. Ten Victorian Poets.
11. E. Blunden. Thomas Hardy.
12. R.J. Cruikshank. Charles Dickens and Early Victorian England.
13. Graham Hough – The Romantic Poets.
14. Mario Prezo - The Romantic Agony.

FOURTH SEMESTER

Course Code	Title of the Course
32042	AMERICAN LITERATURE

Learning objectives:

1. To introduce the students to the literary works of the major American writers of the 19th and 20th centuries so as to enable them to understand the American life and culture against the background of American history.
2. To provide the learners a knowledge of different aspects of American Literature, the stimulus and inspiration it has received from the literature of England and the literary forms, conventions and traditions it has inherited from the past literature of England and Europe.

BLOCK I: PROSE

Unit – I - Edger Allan Poe : The Philosophy of Composition

Unit – II - Thoreau : Civil Disobedience

Unit – III - Henry James : The Art of Fiction

BLOCK II: POETRY

Unit – IV - Edgar Allan Poe : The Raven

Unit – V - Walt Whitman : When Lilacs Last in the Dooryard Bloomed

Unit – VI - Emily Dickinson : Because I Could Not Stop for Death, I Taste
Liquor Never Brewed

Unit – VII - Robert Frost : Mending Wall, Road Not Taken

BLOCK III: FICTION

Unit – VIII - Mark Twain : Adventures of Tom Sawyer

Unit – IX - Toni Morrison : Sula

Unit – X - Bernard Malamud : The Assistant

Unit – XI - Richard Wright : Native Son

BLOCK IV: DRAMA

Unit – XII - Arthur Miller : Death of a Salesman

Unit – XIII - O' Neill : The Hairy Ape

Unit – XIV - Tennessee Williams : Cat on a Hot Tin Roof

References:

1. William J Fisher Ed.: American Literature of the Nineteenth Century.
2. William J Fisher Ed.: American Literature: 1890-1965.
3. Spiller: Literary History of the United States.
4. Edward H Davidson: Poe: A Critical Study.
5. Richard Chase: Emily Dickinson.
6. J. M. Cox: Robert Frost: A Collection of Critical Essays.
7. F. I. Carpenter: Emerson Handbook.
8. G. Wilson: Walt Whitman Handbook.
9. G. Bellamy: Mark Twain as a Literary Artist.
10. Baker: Ernest Hemingway.

FOURTH SEMESTER

Course Code	Title of the Course
32043	INTRODUCTION TO LINGUISTICS

Learning objectives:

1. To expose students to the origin, history and evolution of the English Language.
2. To make them understand the development of an obscure Germanic dialect to a global language.

BLOCK I: BASICS OF ENGLISH

Unit – I - Descent of English Language: Place of English in Indo-European Family of Languages

Unit – II - Word Making in English – Changes in the Meaning of Words

Unit – III - Law – Verner’s Law – Spelling Reform

Unit – IV - Spelling Reform

BLOCK II: VARIETY OF ENGLISH

Unit – V - Foreign Elements in English

Unit – VI - Makers of English

Unit – VII - American English - Standard English

BLOCK III: SPOKEN ENGLISH

Unit – VIII - Speech Mechanism – Cardinal Vowels – Definition & Classification of Diphthongs & Vowels – Accent, Rhythm

Unit – IX - Word Stress, Sentence Stress. Intonation – Elision & Assimilation; Juncture

Unit – X - Received Pronunciation – General Indian English – Phonetic Transcription & Phonemic Transcription

BLOCK IV: USE AND VARIETY OF LINGUISTICS

Unit – XI - Linguistics – What is Linguistics – Uses of Linguistics in Language Teaching

Unit – XII - Animal Communication and Human Language – Language Varieties – Psycho-Linguistics, Socio-Linguistics

Unit – XIII - Traditional Grammar; Basic Sentence Patterns – Structural View of Grammar – IC Analysis – P.S. Grammar – T.G. Grammar

Unit – XIV - Theories of Semantics: Semantics, Pragmatics & Discourses

References:

1. F.T. Wood: An Outline History of English Language.
2. C. L. Wren: History of English Language.
3. Daniel Jones: Cambridge English Pronouncing Dictionary.
4. D.V. Jindal & Pushpinder Syal: An Introduction to Linguistics.
5. A.C. Bough. A History of English Language.

FOURTH SEMESTER

Course Code	Title of the Course
32044	ENGLISH LANGUAGE TEACHING - THEORY AND PRACTICE

Learning objectives:

1. To make the students understand the importance of teaching English.
2. To make the students understand the methods and approaches of teaching English.
3. To acquaint student with the history of the English Language.

BLOCK I: IMPORTANCE AND PRINCIPLES OF ENGLISH

Unit – I Importance of English in India – English Being an official Language Administration – Link Language – Library Language – Scope of English in India – Functions

Unit – II Pedagogical Analysis of English Teaching - Meaning – Characteristics – Aspects

Unit – III Principles of Language Teaching – Linguistic Principles – Concept of Linguistics

BLOCK II: METHODS AND APPROACH

Unit – IV Methods of Teaching English – Grammar cum Translation Method- Direct Method – Substitution Method – Bilingual Method

Unit – V Approaches of Teaching English – Structural Approach – Situational Approach – Oral Approach – Audio Lingual Approach

BLOCK III: TEACHING STRATEGIES

Unit – VI Teaching of English Prose – Definition – Characteristics – Objectives - Methods

Unit – VII Teaching of English Poetry – Definition – Characteristics – Importance - Advantages – Procedures

Unit – VIII Teaching of English Grammar – Characteristics – Objectives – Types – Methods

- Unit – IX** Team Teaching and Teaching of English – Procedure – Suggestions - Advantages
- Unit – X** Lesson Planning – Importance – Characteristics – Preparation of Lesson Plan of a Prose, Poetry and Grammar lesson
- BLOCK IV: INNOVATION AND EVALUATION IN TEACHING ENGLISH**
- Unit – XI** Instructional Materials – Audio-Visual Teaching Aids - Advantages
- Unit – XII** Programmed Instructional Material – Concept – Linear Programme – Branching Programme – Construction of Achievement – Advantages of Self- Instructional Material
- Unit – XIII** Development of Creativity through English Teaching- Approaches – Development – Reading – Composition Writing
- Unit – XIV** Concept of Evaluation – Concept of Test and Examination – Importance – Characteristics – Types

References:

1. Barbara Sang. *Modern English Structure*.
2. Palmer. *Grammar*.
3. Daniel Jones. *An Introduction to English Pronunciation of English*.
4. Gimson. *An Introduction to Pronunciation of English*.
5. F.T. Wood. *History of English Language*.
6. Richards and Rogers. *Approaches and Methods of Teaching English*.
7. Jack C.Richards & Theorde S.Rodgers. *Approaches and Methods in Language Teaching*.
8. Harria David. P *Testing English as Second Language*.
9. Howatt.AP.R_ A *History of English Language Teaching*.
10. Little word, W.T. *Communicative Language Teaching*.

M.A – (History)

S.No	Subject Code	Title of the course	INTERNAL Marks Max.	ESE Marks Max.	Total Marks Max.	C
FIRST YEAR						
I SEMESTER						
1	32111	Indian Civilization and Culture Up to 1206 A.D.	25	75	100	4
2	32112	Tamil Civilization and Culture Up to 1336 A.D.	25	75	100	4
3	32113	Indian Administration	25	75	100	4
4	32111E1	Principles and Methods of Archaeology	25	75	100	4
		Total	100	300	400	16
II SEMESTER						
5	32121	Indian Civilization and Culture From 1206 to 1707 A.D.	25	75	100	4
6	32122	Tamil Civilization and Culture From 1336 to 1947 A.D.	25	75	100	4
7	32123	History of Europe, From 1789 to 1945 A.D.	25	75	100	4
8	32124	History of the Far East From 1840 A.D. to 1945 A.D.	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III SEMESTER						
9	32131	History of India From 1707 to 1947 A.D.	25	75	100	4
10	32132	Contemporary Tamil Nadu Since 1947 A.D.	25	75	100	4
11	32133	Contemporary World Since 1945 A.D	25	75	100	4

**FIRST YEAR
SEMESTER I**

Course Code	Title of the Course
32111	Core – I – Indian Civilization and Culture Up to 1206 A.D.

Course Objects:

- To understand the civilization and culture
- To know about various nations civilization and culture
- To understand the important of civilization and culture development

Course Outcome:

- To know the trends of Indian Civilization and Culture from during Past and Present

BLOCK I: PRE – HISTORY AND PROTO – HISTORY OF INDIA

Unit - I

Meaning of Civilization and culture– Various Sources – Pre-historic Culture – Palaeolithic Ages, Mesolithic Ages and Neolithic Ages.

Unit - II

Socio – Economic and culture of Indus valley Civilization – Socio – Economic condition of Ancient Tamil Civilization.

Unit - III

Early Vedic Period and Later Vedic Period – Caste System –Varnashrama Dharma.

Unit - IV

Rise of New Religions – Causes – Contribution of Jainism to Indian Culture – Mahavira and his teaching.

BLOCK II: ORIGIN OF INDIAN RELIGION

Unit - V

Budhha and his teaching – Contribution of Buddhism to Indian Culture.

Unit - VI

Persian and Greek Invasions and their Impacts – Alexander the Great.

Unit - VII

Mahajanapadas– Rise of Magadha – Culture and Civilization during the Mauryan Ages.

Unit - VIII

Kautilya's Arthashastra–Ashoka the Great – Asoka's Dhamma– Spread of Buddhism.

BLOCK III: SOCIO – ECONOMIC LIFE

Unit - IX

Buddhist Conferences – Cultural Contributions of Sungas–Pushyamithrasungan.

Unit - X

The Age of the Kushanas–Kanishka– Mahayana Buddhism – The Kushanas Art and Architecture.

Unit -XI

Socio – Economic Condition – Art and Culture of Guptas– Golden Age of Gupta.

Unit - XII

Indian Culture during the period of Harshavardhana– TheRajputs– Theories of their origin – Socio, Economic and Cultural Conditions.

BLOCK IV: FOREIGN INVATION

Unit - XIII

The Arab Conquest of Sind – Spread of the Arabic Culture in India – Conquest of Mohamed Gazni.

Unit - XIV

Mohamed Ghor– Socio – Economic and Cultural Condition – Impact of the Turkish Invention.

Books for Reference:

1. Basham. A.L. - The Wonder that was India.
2. Bhandarkar R.G. - Cambridge History of India, Vol.I.
3. Arnold J. Toynbee - Study of History.
4. Percy Brown, - Indian Architecture.
5. Luniya B.N. - Evolution of Indian Culture.
6. Sathianathaier R. - A Political and Cultural History of India,

Vols. I & II.

7. SrinivasIyengar. P.T. - Life in Ancient India.
8. Swain. J.E. - History of World Civilizations.
9. Sripathi. R.S. - History of Ancient India, Upto 1200 A.D
10. Majumdar. R.C. - An Advanced History of India.
11. Vincent. A.Smith - The Oxford History of India.
12. Koasambi. D.D. - The Culture and Civilization of Ancient India.
13. Srivastava . A.L. - The Sultanate of Delhi.
14. Mahajan .V.D - History of Ancient India
15. Majumdar.R.K&
Srivastva.A.N - Indian History from Earliest Times to 1526 A.D
16. Venkatesan.G - History of India (3000 BC to 1757 A.D)
17. VenkataRaman .T.K - A History of India upto 1206 A.D.
18. Sathianathaier .R - A Political and Cultural History of India – Vol.I

Course Code	Title of the Course
32112	Core – II – Tamil Civilization and Culture Upto 1336 A.D.

Course Objectives:

- To know an overview of sources from Geographical, Archaeological, Literary and Foreigner Diary
- To understand Paleolithic, Neolithic, Megalithic, Sangam Age, invasion Kalabhras, Pallavas, Bhakthi movement, Pandyas and Chola rulers.
- To formation of Sultanate and Cultural centers in Tamil Nadu.

Course Outcome:

To knowledge the Tamil Culture, Rulers from various period, invasion from internal and external Personalities and located the Heritage centers in Tamil Nadu.

BLOCK I: PRE – HISTORIC PERIOD

Unit – I

Geographical features of Tamilnadu - Sources – Archaeological Sources – Literary Sources – Foreigner Diary.

Unit -II

Palaeolithic Culture – Neolithic Culture – Megalithic Culture.

Unit - III

Sangam Age and Classical Literature – Tamil Powers of the Sangam Age – Socio – Economic and Religious Condition.

Unit - IV

The Age of Kalabhras– Sources and Information – Spread of Jainism and Buddhism in Tamilagam Legacy of the Kalabhras.

BLOCK II: AGE OF EMPIRES

Unit -V

Origin of Pallavas– Sources of Information – Early Pallavas– The Great Pallavas– Pallava–Chalukya Conflict.

Unit -VI

Emergence of the Pallavas– Socio – Economic Condition – Art and Architecture of the Pallavas

Unit - VII

Genesis of Bhakthi Movement – Causes –Bhakthi Saints –Saivism– 63 Nayanmars–Appar– Sambandar– Sundarar and Manikavasagar–Devaram– Thiruvagasam.

Unit - VIII

Vaishnavism– TwelveAlvars–Nalayirathivyaprabandam–Thirupavai–
Saivasiddhanta Agamas.

BLOCK III: LATTER EMPIRES AND FOREIGN VISITORS

Unit - IX

Pandyas of Madurai – Early Pandyas– Socio – Economic and Cultural
Contribution.

Unit - X

Emergence of Chola Empires –Parantaka I – Raja Raja I –Rajendra I –Kulothunga I
– Socio –
Economic and Religious Condition – Art and Architecture.

Unit - XI

Emergence of later Pandyas–JatavarmaSundara Pandya I –
MaravarmanKulasekar Pandya – Visit of Marcopolo– Socio Economic and
Religious condition – Art and Architecture.

BLOCK IV: FORMATION OF SULTANATE AND CULTURAL HERITAGES

Unit - XII

Formation of Madurai Sultanate – Socio – Economic and Cultural conditions during
this period.

Unit - XIII

Cultural Heritage Centres of Tamil Nadu –Mamallapuram–Kancheepuram,
Thanjavur–Darasuram.

Unit - XIV

Gangaikondacholapuram–Sittannavasal–Pillayarpati, Kudumiyanmalai– Madurai -
Rameswaram.

Books for Reference:

1. .KrishnaswamyAiyangar. S - South India and the Muhamadan Invasions
2. ChampakaLekshmi (ed). - The State in Pre-Colonial South India
3. Jeyapalan .N - Social and cultural History of Tamil Nadu

4. Srinivasa Iyyengar.PT. - History of the Tamils
5. KarashimaR.Noboru, - South Indian History and Society
6. Mahalingam. T.V. - Readings in South Indian History
7. Mahalingam T.V. - Administration & Social Life under
Vijayanagar
8. Minakshi. - Administration &
Social Life under the
Pallavas
9. Devanesan .A - History of Tamil Nadu (upto 1995 A.D)
10. Pillay K.K. - A Social History of the Tamils
11. Pillay K.K. - History of India, with Special Reference to Tamil
Nadu
12. Rajayyan.K. - History of Tamil Nadu,
1565 to the Present Day
13. Raman, K.V. - Some Aspects of
Pandyan History in the of Recent Discoveries
Lights
14. Nilakanta, Sastri, K.A - The Pandya Kingdom
15. NilakantaSastri. K.A. - A History of South India
16. NilakantaSastri K.A. (ed) - Foreign Notices of South India
17. Sathinathaier.R - History of Thondaimandalam
18. Srinivasan. K.R. - Temples of South India
19. Subrahmanian. N. - Sangam Polity
20. Subrahmanian. N. - History of Tamil Nadu
21. Krishnaswami. A - Topics in South Indian History upto 1565 A.D
22. Subramanian .N - Social and cultural History of TamilNadu (up to
1336AD)

Course Code	Title of the Course
32113	Core – III – Indian Administration

Course Objectives:

The learner should be well versed with the fundamentals of Maurya ,Chola period, To learn various British structures, should be able to during development of States. Also, the learner should know different District formation and Administration.

Course Outcome:

After the completion of this course, the student will able to To knowledge structures, formation of Acts of British rulers. To understand the past and present scenario of India

BLOCK I: HISTORICAL CONTEXT

Unit - I

Evolution of Indian Administration upto 1858 A.D: Maurya period – Gupta period –

Unit -II

Chola period – Delhi Sultanate period – Mughal Period.

Unit - III

British period till 1858 – Regulating Act – Nature of Administration.

Unit - IV

Indian Administrative System between 1858- 1947: Indian Administration under the Act of 1909 and 1919.

BLOCK II: GROWTH OF INDIAN ADMINISTRATIVE SYSTEM

Unit - V

Development of Indian Administration under the Govt .of India Act of 1935

Unit - VI

Improvement measures in Indian Administration – Indian Independence Act of 1947- Legacy of British to Indian Administration.

Unit - VII

Indian Administration After 1947 : Frame work of Indian constitution – Union and State Administrative Relations

Unit - VIII

Parliamentary Democracy – Administration of Union Territories Fundamental Rights.

BLOCK III: CENTRAL ADMINISTRATION

Unit - IX

Directive Principles of State Policy- National Emergency and Indian Administration.

Unit - X

Structure of Central Administration: President- Prime minister and council of ministers. Cabinet committees.

Unit - XI

Central Secretariat – Chief Secretary - Public Services – All India Services.

Unit - XII

Civil services- Union Public Service commission – Recruitment methods – Training for civil servants.

BLOCK IV: STATE ADMINISTRATION

Unit - XIII

Structure of State Administration : Governor – Chief minister - Council of ministers - secretariat –

Chief secretary- Directorates – State Public Service Commission.

Unit - XIV

District Administration – Rural Administration - Lok Pal, LokAyuktas – Contemporary challenges –

Administrative Reforms in India.

Books for Reference:

- | | | |
|---|---|---|
| 1. HansRaj | - | Indian Administration |
| 2. Padma Rama Chandran | - | Public Administration |
| in India 3. Hoshiar Singh and Pardeepsachdeva | - | Administrative |
| Theory 4. Venkatesan.G | - | Public Administration |
| 5. | | Polinaidu .S - Public Administration |
| 6. | | Sachdeva. D.R and Dua B.D. -
Studies in Indian Administration. |
| 7. Maheshwari S.R. | - | Local Government in India |
| 8. Aslam. M | - | Panchayati Raj in India |

Course Code	Title of the Course
32111E1	Principles and Methods of Archaeology

Course Objectives

To be able to use methods of Archaeology and data structure
 To learn and important of excavation techniques
 To introduce the new thoughts and compare the present situations.

Course Outcome

Students can develop Archaeology knowledge/
 Students can analyses any kind of sources Data Structure and how to handle preserve

BLOCK I: THE IDEA OF ARCHAEOLOGY

Unit - I

An Introduction of Archaeology: Meaning – History and Archaeology – Pre-historic and Historic Archaeology.

Unit - II

Kinds of Archaeology –Excavation and Exploration – Cultural and Historical Context.

Unit - III

Henri Schliemann – Thompson – Development of New Archaeology.

Unit - IV

Archaeology in India : The Asiatic Society – Sir William Jones – James Princep.

BLOCK II: THE GREAT ARCHAEOLOGIST AND EXVATION

Unit - V

Colin Meckenzie - Alexander Cunningham – Ancient Monuments Preservation Act - Archaeological Survey of India.

Unit - VI

Sir John Marshall – Sir Mortimer Wheeler – Robert Bruce Foote- Mohenjadarо, and Harappa Excavations- Dwaraka Excavations.

Unit - VII

Archaeology in Tamilnadu : Pre historic sites – Arikamedu – Adichchanallur.

Unit - VIII

Uraiyur – Kaverpoompattinam.

BLOCK III: NEW EXVATION FIELDS

Unit - IX

Mohanur – Pallavaram – Kodummal - Keezhdi.

Unit - X

Excavation Methods: Site Survey – Geological Survey – Horizontal Excavation – Burial Excavation - Archaeological Recording.

BLOCK IV: DATING, SURVEY AND CONSERVATION

Unit - XI

Land Survey – Topographical Survey – Stratigraphy and its importance.

Unit - XII

Three Dimensional Recording – Drawing – Ariel Photography – Cataloguing – Conservation Methods.

Unit - XIII

Dating Methods: Relative Dating – Absolute Dating – Radio Carbon Dating (C14 Dating)– Dendrochronology – Thermoluminescence.

Unit - XIV

Archaeomagnetism –Potassium Test – Argon Method – Fluorine Test – Nitrogen Test – Pollen Test.

Books for Reference:

1. Philip. Barkar. - Techniques of Archaeological Excavation
2. Colin Renfrew, - Archaeology Theories, Methods and Practices
3. Gamble Clive. - Archaeology: The Basics
4. Daniel, Glyn E. - A Hundred and Fifty Years of Archaeology
5. Harris, Edward C. - Principles of Archaeological Stratigraphy
6. Rajavelu.S. - Archeological Excavations in TamilNadu.
7. Venkatraman.R. - Indian Archaeology.
8. Raman, K.V. - Principles and Methods of Archaeology
9. Rajan.K., - Archaeology: Principles and Methods
10. Robert J Sharer & Wendy Ashmov - Fundamentals of Archaeology
11. Trigger. G, Bruce, - A History of Archaeological Thought
12. Ekambaranathan .A &Ponnusami.R - Principles and methodsof Archaeological Excavation (Tamil)

SEMESTER II

Course Code	Title of the Course
32121	Core – IV – Indian Civilization and Culture From 1206 to 1707 A.D.

Course Objectives:

To enable the students to learn the basics of Civilization and Culture skills, aptitude. To improve the civilization and Culture during the various dynasties To enable the students to Art and Architecture To understand the rivals and Marathas formation

Course Outcome:

Understood the basics of culture and work Acquired knowledge in civilization Know about the various rulers and social thoughts Art and Architecture presentations Engage in religious policy Rivals from other religion Participate in Religious harmony functions.

BLOCK I: INDIAN CIVILIZATION AND CULTURE FROM 1206 TO 1707 AD.

Unit - I

Delhi Sultanate: Slave, Khilji, Tughluq, Sayyid and Lodi dynasties and their cultural contributions.

Unit - II

Indo-Islamic culture – Administration of the Delhi sultanate – Socio- Economic and Religious condition.

Unit - III

Art and Architecture under the Sultanate – Mongol and Timur Invasions and their results – Decline of the Delhi Sultanate.

BLOCK II: BHAKTHI MOVEMENT , SUFISM AND SIKHISM

Unit - IV

Bhakti Movement: Religious Reformers – Ramanand-Kabir-Guru Nanak.

Unit - V

Chaitanya –Mirabai - Results of Bhakti Movement.

Unit - VI

Sufism – Rise of the Sikhs - Sikhism and its impact.

BLOCK III: VIJAYANAGAR AND BAHMINI RULERS

Unit - VII

Vijayanagar and Bahmini Kingdoms : Glories of Vijayanagar and Bahmini rulers.

Unit - VIII

Art and Architecture under Vijayanagar and Bahmini rulers - Decline of Vijayanagar Empire.

BLOCK IV: MUGHAL DYNASTY, HINDU RULER AND MARATHAS

Unit - IX

The Mughal Dynasty: Babur – Humayun – Akbar.

Unit - X

Jahangir – Shahjahan – Aurangzeb – their cultural contribution.

Unit - XI

Socio- Economic condition – Mughal Administration - Mughal Art and Architecture.

Unit - XII

Din-ilahi and its significance – Religious Policy of the Mughal rulers and its impact in India – The decline of the Mughal empire.

Unit - XIII

Revival of Hindu rule under Shivaji : contact with the Mughals and its Impact – Administration - Socio – Economic.

Unit - XIV

Religious condition – Art and culture under the Marathas.

Books for Reference:

1. Majumdar R.C. - An Advanced History of India.
2. Percy Brown - Indian Architecture.
3. Luniya B.N. - Evolution of Indian Culture.
4. Sathianathaier R - Political and Cultural History of India.
5. Robert Sewell - The Forgotten Empire
6. Jadunath Sarkar - Shivaji and His Times.
7. Iswari Prasad - The Short History of the Muslim Rule in India.
8. Lane Pool - Babur
9. Naqui H.K. - History of the Mughal Government and Administration.
10. Sharma.S.R. - Mughal Empire in India.
11. Venkatesan .G- History of India (3000 BC -1757 A.D)
12. Irfan Habib. - Researches in the History of India.
13. Khurana.K.L - Medieval India(1000- 1761 A.D)
14. Sathianathaier .R - A Political and cultural History of of India Vol .II

(Medieval India)

Course Code	Title of the Course
32122	Core – V – Tamil Civilization and Culture From 1336 to 1947 A.D.

Course Objectives:

- To understand the fundamentals source from various records
- To make a study of Saivism and Vaishnavism and Vadakalai ,Tenkalai
- To know aboutNayaks, Administration Poligari system and Caste division reasons
- To impart knowledge in Dravidian growths and self respect movement

Course Outcome:

- The ancient languages and its impacts with relations are to learn
- Acquire the knowledge of evaluation to monitor the conflicts of religion activities
- Develop new Government and its function through welfare aspects,

BLOCK I: SOURCES OF TAMIL CIVILIZATION

Unit - I

Sources –Sanskrit and Telugu works- Tamil Works – Foreign Accounts- Government Orders – Diaries.

Unit - II

Tamil Culture under Vijayanagar –Social and Economic condition –Art and Architecture.

Unit - III

Religious condition– Saivism, Vaishnavism – ViraSaivism – Vadakalai – Tenkalai Sects

Unit - IV

Nayaks rule in Tamilnadu - Madurai, Thanjavur and SenjiNayaks – Administration.

BLOCK II: POLIGARI SYSTEM, IMPORTANT TEMPLES AND CULTURAL CONTRIBUTION

Unit - V

Poligari system – Kaval system - Society – Caste division – Status of women – Temples and festivals – Cultural contribution.

Unit - VI

Temples in Madurai, Srirangam, Thiruvavur, Rameswaram, Chidambaram – Tirunelveli – Srivilliputtur.

Unit - VII

Marathas and Sethupathis – Marathas of Thanjavur – Raja Serfoji.

Unit - VIII

SaraswathiMahal Library - literary and cultural contributions.

BLOCK III: SOCIO, ECONOMIC AND RELIGIOUS CONDITIONS

Unit - IX

Social, economic and religious conditions – Cultural Contribution of Sethupathis of Ramnad.

Unit - X

Impact of British in Tamil Nadu – Socio-Economic Life of the Tamils under British rule - Education – Primary – Secondary – Collegiate & University.

Unit XI

Role of missionaries – Social Legislations – Abolition of Sati, Child marriage, Widowhood, Devadasi system.

BLOCK IV: DRAVIDIAN MOVEMENT AND VARIOUS RULERS

Unit XII

Dravidian Movement – Non-Brahmin organization – causes – South Indian Liberal Federation - The Justice Party.

Unit XIII

Social transformation – social and cultural issues –Justice Manifesto – Self Respect Movement of Periyar – Status of Women.

Unit XIV

Social legislations – Dravidian Journals and Literature – Launch of DK movement – Principles and Reforms of DK.

Books for Reference:

1. Rajayyan. K. - History of Madurai, 1736 – 1801 A.D.
2. Rajayyan. K. - South Indian Rebellion
3. Rajayyan. K. - British Diplomacy in Tanjore
4. Rajayyan, K. - Rise and Fall of the Poligars of Tamil Nadu
5. Rajayyan. K. - Administration and Society in the Carnatic, 1701 – 1801 AD
6. Rajayyan. K. - A Real History of Tamil Nadu, Upto 2004 A.D.
7. Subramaniam.N - History of Tamil Nadu (1336-1984)
8. Krishnasamy Pillai. A - Tamil Nadu under Vijayanagar
9. MohanRam .K
&Kaimuthu A.K - Tamizhagam – An Amazing People’s History
10. Nadarajan .C - Social History of Modern Tamilnadu
11. Devanesan .A. - History of Tamilnadu (up to 1995 A.D)
12. Jayapalan .N - Social and Cultural History of Tamilnadu

Course Code	Title of the Course
32123	Core – VI – History of Europe, From 1789 to 1945 A.D.

Course Objective:

To develop an understanding of French revolution and Napoleon Bonaparte reforms
 To develop to know the Foreign policy in various nations administrations

To learn how to unify the nation, and formation of UNO

Course Outcome:

Able to understand and the French rulers and their performance

Understand and implement the features UNO functions and activities

BLOCK I: FRENCH REVOLUTION, NAPOLEON BONAPARTE AND FRANCE

Unit - I

France on the Eve of French Revolution - The French Revolution – Causes – Course – Results.

Unit - II

Napoleon Bonaparte – Reforms – Continental System.

Unit - III

Foreign Policy – The Congress of Vienna, 1815.

Unit - IV

The Concert of Europe – Metternich – Revolutions of 1830 and 1848 in France.

BLOCK II: NAPOLEON III AND UNIFICATION OF NATIONS

Unit - V

Napoleon III – Domestic and Foreign policy.

Unit - VI

Unification of Italy – Political Divisions of Italy – course of unification – Results.

Unit - VII

Unification of Germany- Early attempts to unify Germany – course of unification - Results

BLOCK III: EASTERN QUESTION, WARS AND PEACE SETTLEMENT

Unit - VIII

Eastern Question – Greek War of Independence – Crimean War – Berlin Congress.

Unit - IX

Balkan Wars – World war I- causes – course –Results – Peace settlements.

Unit - X

League of Nations – Aims – Functions and Achievements – Causes for the failure.

BLOCK IV: RUSSIAN REVOLUTION, FORMATION OF UNO AND ITS FUNCTIONS

Unit - XI

Russian Revolution of 1917 - Causes – Course – Results.

Unit - XII

Rise of Fascism and Nazism – Hitler and Mussolini.

Unit - XIII

Outbreak of World War II – causes - course and results – Wartime conferences.

Unit - XIV

Formation of the UNO – Aims of the UNO – Organs of the UNO and their functions.

Books for Reference:

1. Hazen, Charles Downer, - Modern Europe, Since 1789
2. Sen .S.N - Contemporary World
3. Roberts, J.M., - Europe 1880-1945
4. Mahjan V.D. - History of Europe Since 1789
5. Grant A.J. & Temperley - Europe in the Nineteenth and Twentieth Centuries.
6. Gooch. G.P. - History of Modern Europe, 1878 – 1919.
7. Hazan C.D. - Modern Europe, Upto 1945.
8. Jayapalan . N & Joseph .S - History of Europe 1789 - 1970
9. Krishnamurhti.V.M. - World History (From 1500-1950 A.D)
10. Srivastava L.S & Joshi V.P - International Relations (From 1914 to
11. Present day)
12. Ramalingam T.S - History of Europe 1789 – 1945 A.D

Course Code	Title of the Course
32124	Core – VII – History of the Far East From 1840 A.D. to 1945 A.D.

Course Objective:

- To develop an understanding of Western Influence in China, Taiping Rebellion and second Opium war
- To develop the understand Western Influence in Japan and US relation and the wars.
- To learn how to Expansion of Japan, Washington conference, Kuomintang party and Long March of Mao-Tse – Tung.

Course Outcome:

- Able to understand and Far East Asia conflicts
- Understand and implement the features of nation's development, Leaders role in second world war

BLOCK I: WESTERN INFLUENCE IN CHINA AND JAPAN

Unit - I

Western Influence in China – The First Opium War – Causes – Course – Effects.

Unit - II

Taiping Rebellion – Causes – Course – Effects.

Unit - III

The Second Opium War – Treaty of Tientsin.

Unit - IV

Western Influence in Japan - Japanese – U.S. Relation – Perry Mission – Treaty of Kangawa.

BLOCK II: CHINA AND JAPANESE WAR AND ITS EFFECTS

Unit - V

Meiji Restoration – Causes and Significance – Japan's Relation with Korea – Constitutional Movement in Japan.

Unit - VI

The Sino – Japanese War of 1894-95 - Causes – Course – Effects.

Unit -VII

Hundred Days Reforms – Boxer Rebellion - Reform Movements in China – The Chinese Revolution of 1911- Causes – course – Effects.

Unit - VIII

China between 1912 and 1920 – Role of China in the Worldwar I - 21 Demands of Japan.

BLOCK III: ANGLO AND JAPAN TREATIES AND FIRST WORLD WAR

Unit - IX

Anglo – Japanese Treaty of 1902 – Russo – Japanese War, 1904 -05- Causes – Course – Effects.

Unit -X

Expansion of Japan, 1905 -1921 – Role of Japan in the World War I.

Unit - XI

Washington conference – Tanaka Memorial – Militarism in Japan – Manchurian Crisis.

BLOCK IV: MILITARY DICTATORSHIP AND CHINA AND JAPAN SECOND WORLD WAR

Unit - XII

Military Dictatorship in China - Dr. Sunyatsen – Yuwan Shi-Kai - Chiang Kai Sheik.

Unit -XIII

Kuomintang party – Second – Sino – Japanese War 1937- 45- Chinese Communist Party – Long March of Mao-Tse – Tung.

Unit- XIV

Role of China and Japan in the Second world war – Impacts.

Books for Reference:

- | | | |
|-----------------------------------|---|--|
| 1. Shivkumar& Jain | - | History of Modern Japan |
| 2. Majumdar R.K. &Srivastva. A.N. | - | History of Modern Japan |
| 3. Majumdar R.K. &Srivastva. A.N. | - | History of Modern China |
| 4. VenkataRamanappa M.N. | - | Modern Asia |
| 5. Shivkumar& Jain | - | History of Modern China |
| 6. Jeyapalan.N. & Joseph .S | - | History of Modern Asia Since 1900 A.D |
| 7. Rao B.V. | - | World History from Early Times to 2000 A.D |
| 8. Majumdar.R.K&Srivastva A.N | - | History of Far East |
| 9. Kundra.D.N. | - | World History (From Earliest times to 1950 A.D |

SECOND YEAR SEMESTER III

Course Code	Title of the Course
32131	Core – VIII– HISTORY OF INDIA FROM 1707 TO 1947 A.D.

Course Objective:

- To provide an overview of establishment of British settlement, French and Carnatic war
- To understand war from other places, Pitt's India Act and Governor Generals Act
- To know the Anglo and other country war, The Revolt of 1857 and Transition of power to Crown
- To understand the Gandhiji era, Round Table conferences, Netaji and INA ,Partition and Independence and Indian Independence Act.

Course Outcome:

Able to understand the India and other Nation conditions
Able to receive the information from British rule and Governor Administration
Able to understand the Independence India and its struggle,
Growth of India.

BLOCK I: ESTABLISHMENT OF BRITISH RULE IN INDIA

Unit - I

Establishment of British settlements in India – Anglo – French Rivalry – The Carnatic wars – Causes - and results.

Unit - II

Company's ascendancy in Bengal – Battle of Plassey – Battle of Buxar – Robert Clive – Double Government.

Unit - III

Growth of British East India Company through Acts – the Regulating Act – Pitt's India Act – Charter Acts of 1813 ,1833 & 1853.

Unit - IV

Colonialism in India – Governor Generals and their policies -Permanent Settlement – Subsidiary Alliance.

BLOCK II: REFORMS IN INDIA AND INDIAN REVOLT

Unit - V

Reforms of Bentinck – Doctrine of Lapse – and its impact –Anglo Mysore wars.

Unit - VI

Anglo – Maratha wars – Anglo – Burmese war - Anglo-Sikh wars.

Unit - VII

Anglo Afghan Wars. – The Revolt of 1857 – Causes –course- Results

BLOCK III: TRANSITION POWER AND VICEROYS ADMINISTRATION

Unit - VIII

Transition of power to Crown – The Age of Viceroys – Canning – Lytton - Ripon.

Unit - IX

Curzon - Irwin - Mountbatten - Relations with Native states – The Acts of 1861,1892 ,1909, 1919, 1935.

Unit - X

Rise of National Awakening - South Indian Rebellion, 1800 – 1801 – Vellore Mutiny – Rise of Nationalism – Causes - Birth of INC – Moderates – Extremists.

BLOCK IV: IMPORTANT MOVEMENTS AND INDIAN INDEPENDENCE

Unit - XI

The Muslim League – Home Rule Movement – Rowlat Satyagraha - Jallian

Unit - XII

Gandhian Era –Non- Cooperation Movement - Civil Disobedience Movement.

Unit - XIII

Round Table conferences – Individual satyagraha - Quit India Movement.

Unit - XIV

Netaji and INA – Jinnah – Direct Action Day – Partition and Independence – Indian Independence Act.

Books for Reference:

1. Agarwal R.C - Constitutional History of India and National Movement.
2. Chopra - Advanced History of India, 3 Volumes.
3. Grover and Grover - A New Look and Modern Indian History,
4. NilakantaSastri K.A - Advanced History of India.
5. Roy Choudry S.E - History of Modern India
6. Sen S.N. - History of Freedom Movement of India, 1857-1947
7. Tarachand - History of Freedom Movement in India, 4 volumes.
8. Vincent A Smith - The Oxford History of India.
9. Low D.A. - Congress and the Raj
10. Rajendran.N. - Nationalist Movement in TamilNadu.
11. Majumdar.R.C - History and Culture of Indian people the Emergence of Indian Nationalism
12. Sumitsarkar - Modern India 1855 -1947
13. Khurana.K.L - Modern India 1707 – 1967 A.D
14. Bipanchandra - India's struggle for Independence
15. Mahajan V.D - Modern Indian History From 1707 to Present day

Course Code	Title of the Course
32132	Core – IX – CONTEMPORARY TAMIL NADU SINCE 1947 A.D.

Course Objective

- Able to understand the post India development and present conditions
- Able to know the Principles of policy making and growth

Course Outcome

- Students have acquired the knowledge about the Tamil Nadu
- Students have acquired the knowledge about the functions of Government systems.

BLOCK I: POST INDEPENDENCE OF TAMILNADU AND CONGRESS PARTY

Unit - I

Post Independent Tamil Nadu – Congress ministry – O. V. Rangaiah – P.S.Kumara Swami Raja.

Unit - II

Rajaji – State Re-organization in Tamil Nadu.

Unit - III

North South Border Agitations – Formation of Madras state.

Unit - IV

Kamaraj and his ministry – Developmental schemes – Social, Economic.

Unit - V

Educational – Programmes – Industrial Development - K. Plan.

BLOCK II: ANTI HINDI AGITATION, FORMATION OF DMK AND ADMK

Unit - VI

M. B. Jeyaraj – Anti Hindi Agitation – Achievements of Congress ministry 1947 -67.

Unit - VII

Formation of DMK – C. N. Annadurai and his Ministry - M. Karunanidhi and his Ministry.

Unit - VIII

Welfare Schemes – Socio - Economic and Educational Developments during DMK regime.

Unit - IX

Formation of AIADMK – M. G. Ramachandran and his Ministry – J. Jeyalalitha and her Ministry – Developmental Schemes.

BLOCK III: SOCIO ECONOMIC DEVELOPMENT AND WORLD TAMIL CONFERENCES

Unit - X

Social, Economic and Educational developments during ADMK regime.

Unit - XI

Centre – State Relations since 1947 AD.

Unit - XII

World Tamil Conference – Development of Tamil Language.

BLOCK IV: FIVE YEAR PLANS AND RESERVATION POLICY

Unit -XIII

Five Year Plans and Tamil Nadu – Irrigation – Agriculture - Industrial development.

Unit –XIV

Reservation policy and Social Justice.

Books for Reference:

1. Rajayyan,K - History of Madurai, 1736 – 1801 A.D.
2. Rajayyan, K. - A Real History of Tamil Nadu, Upto 2004 A.D.
3. Subramanian, N. - History of Tamil Nadu (PL.II)
4. Gopalakrishnan M.D - Periyar , Father of the Tamil Race
5. Sathianathier.R, - History of India, Vol. II
6. B.S.Baliga, - Studies in Madras Administration, 2 vols.
7. Edgar Thurston, - Castes and Tribes in South India
8. .Baker, C.J. - The Politics of South India
9. Yesudhasan, V.S.Isaac& - History of Tamil Society and Culture,
Since Jaya Dhas, R. 1336 A.D.,
10. John Gilbert .G - Contemporary History of India,
11. Venkatesan, G. - History of Modern Tamilnadu From, 1600 – 2011 A.D
12. Nadarajan .C - Social History of Modern Tamil Nadu
13. Subramanian .N - History of Tamilnadu 1336 – 1984 A.D
14. Devanesan .A - History of Tamilnadu (up to 1995 A.D)
15. Balasundaram.M - Kamaraj and his secrets of Success
16. Veeramani.K - The History of the Struggle for Social Justice in
Tamilnadu.

Course Code	Title of the Course
32133	Core – X – CONTEMPORARY WORLD SINCE 1945 A.D

Course Objectives:

- To understand world war and its reflections
- To understand nationalism .united nations and reunion of states
- To learn the internal conflict of nations and its facts.

Course Outcome:

- Able to understand the nation and its problems
- Acquire knowledge about present world scenario

BLOCK I: WORLD WAR II AND UNO

Unit - I

World after the World War II – the UNO – Formation, Functions and achievements.

Unit - II

The concept of International Relations – Meaning and Nature – Diplomacy.

Unit - III

Kinds of Diplomacy – Balance of Power – Collective Security.

BLOCK II: NATIONALISM AND OTHER TREATIES

Unit - IV

Nationalism in Asia and Africa - Emergence of the New Nations in Asia and Africa – Rise of Asia – China, Japan , Indonesia.

Unit - V

India – Rise of African States – Disintegration of the colonial system – Neocolonialism.

Unit - VI

The Idea of Regionalism – EEC – European Union –The Arab League– The Organisation of African Union.

Unit - VII

NAM - Commonwealth of Nations – OAS – OPEC -ASEAN– SAARC – IBSA – BRICS.

Unit - VIII

Arms Race –Disarmament Treaties – NPT – SALT – SALT II –START I – START II – CTBT – The Impact of Nuclear Weapons on International Politics.

BLOCK III: COLD WAR AND TIS IMPACTS

Unit - IX

Bipolar Politics - The Cold War – causes – stages – Its impact in International Relations.

Unit - X

Super Power Rivalry– End of the Cold War– Collapse of the Soviet Union.

Unit - XI

Reunion of Germany – WTO – Globalization - the concept of Unipolar world.

BLOCK IV: CONTEMPORARY POLITICAL ISSUES AND THE RESULTS

Unit - XII

Contemporary political Issues : Role of the U.S.A. in World Affairs — Korean War – Vietnam War.

Unit - XIII

Congo Affair – Cuban Crisis – Indo–China conflict - Arab – Israel Conflict.

Unit - XIV

Iran–Iraq conflict - Gulf War – Organization of Islamic Countries – International Terrorism – War on Terrorism.

Books for Reference:

1. Charles, P.Schleicher., - International Relations co-operation and Conflict
2. Mahajn V.D - History of Modern Europe
3. Henkin Louis, - The Rights of Man Today, (Boulder West View Press, 1978).
4. ParshantAtkaan - International Relations and organizations
5. Johari, J.C. - International Relations and Politics (Post-cold war Era)
6. Morgenthau Hans J., - Politics among Nations.
7. Schumann, - International Politics, (5th Edition)
8. Subramanian.N., - International Relations
9. Sen .S.N - Contemporary World
10. Kulshrestha.K.K. - International Relations From 1919 to Present day
11. Majundar.R.K - History of the United states of America (From 1845 to &Srivastva.A.N Present day)
12. Chchabra.K.K - History of Modern world Since 1945 A.D
13. Rao .B.V - World History From Early Times to 2000 A.D.

Course Code	Title of the Course
32134	TOURISM AND CULTURAL HERITAGE OF INDIA

Course Objective:

- To understand meaning of Tourism and developments
- To understand Cultural Heritage of India and Hill Resorts in Tamil Nadu
- To understand Achievements and failures of Tourism Industry in India.
- To know Problems of the Tourism Industry, Possible remedies for its development and Future of Tourism in India.

Course Outcome:

- Understanding features of Tourism and industry
- Learn to need heritage centers and Dress and Ornaments
- Acquire knowledge about Important mountain Resorts
- Able to Role of Ministry of Tourism Functions of ITDC and TTDC.

BLOCK I: TOURISM AND ITS CULTURE

Unit - I

Meaning of Tourism – Tourism and Culture – Role of Geography.

Unit - II

Development of Accommodation, Transportation and Communication Technology
– E- Tourism

Unit - III

Cultural Heritage of India – Fairs and festivals – Dress and Ornaments.

Unit - IV

Handicrafts – Popular Indian dishes and food habits.

BLOCK II: CULTURAL CENTRE AND ITS GROWTH

Unit - V

Cultural centres of Buddhists – Hindus - Muslims –Sikhs and Christians in India.

Unit - VI

National Heritage – Important monuments - Delhi - Agra – Jaipur – Varanasi

Unit - VII

Konark –Khajuraho - Aihole –Mamallapuram- Important Wild life Sanctuaries.

Unit - VIII

Birds Sanctuaries - Project Tiger – Zoological Parks - Museums and Art Galleries.

BLOCK III: IMPORTANT OF PLACES AND ECONOMIC DEVELOPMENT

Unit - IX

Important mountain Resorts – Himalayan Region and Kashmir.

Unit - X

Hill Resorts in Tamil Nadu – Beaches of India – Goa and Diu.

Unit - XI

The Marina – Kovalam – Mamallapuram – Kochi – Andaman and Nicobar.

BLOCK IV: ADVANTAGES AND FUTUTRE OF TOURISM INDUSTRY

Unit - XII

Achievements and failures of Tourism Industry in India.

Unit - XIII

Role of Ministry of Tourism Functions of ITDC and TTDC.

Unit - XIV

Problems of the Tourism Industry – Possible remedies for its development –
Future of Tourism in India.

Books for Reference:

1. Ram Acharya, - Tourism in India.
2. Bhatia, A.K. - Tourism in India.
3. Percy Brown, - Indian Architecture.
4. Manoj Das, - India, a Tourist Paradise.
5. Humayun Khan - Indian Heritage
6. Basham A.L. - The Wonder That was India.
7. Krishnalal and Gupta.S.P. - Tourism, Museums and Monuments in India.
8. Gopal Singh - The Geography of India.
9. Smith.V.A. - History of Fine – Arts in India and Ceylon.
10. David Philips - Monuments of India.
11. Devanesan A - Tourism Products
12. Prannathseth - An Introduction to Travel and Tourism
13. Abbas .R. - Tourism and Travel Management.

SEMESTER IV

Course Code	Title of the Course
32141	Core – XII – CONTEMPORARY INDIA SINCE 1947 A.D.

Course Objective:

- To understand partition and its impact the integration of Indian Princely States and languages
- To understand Foreign policy, Non-alignment, Panchsheel, anti racism and UNO & SAARC
- To understand the rulers and the salient features in India all the aspects.

Course Outcome:

- Explore the Indian socio-economic conditions in India
- Learn reorganization of Indian states and neighbor countries relations
- Acquire knowledge about the five year plans and rural developments
- Able to know Mandal commission report internal and external policy

BLOCK I: PARTITION OF INDIA AND SARDAR PATEL

Unit - I

Partition and its impact – Integration of Indian Princely States – Role of Sardar Patel.

Unit - II

Making of Indian Constitution – Salient Features of Indian Constitution.

Unit - III

Reorganization of Indian States on Linguistic Basis

BLOCK II: FOREIGN POLICY OF INDIA WITH OTHER NATIONS

Unit - IV

Foreign Policy of India – Salient Features – Non-alignment – PanchSheel – Anti – Racism.

Unit - V

Relations with the USA, Russia, China, Pakistan - the UNO & SAARC.

BLOCK III: FIVE YEAR PLANS AND NEHRU ERA

Unit - VI

Planned Economy of India – Five Year plans – Agriculture – Horticulture – Animal Husbandry.

Unit -VII

Dairy Development – Rural Development - Panchayat Raj.

Unit - VIII

Health and Family Planning – Major Industries – Import and Export

Unit - IX

Nehru Era – Centre – State Relations – LalbahadurSastriand the Indo- Pakistan War of 1965.

BLOCK IV: INDIRA GANDHI AND IMPORTANT LEADERS ROLES

Unit - X

Split in the Congress – Era of Indira Gandhi– Indo-Pakistan War of 1971.

Unit - XI

Declaration of Emergency – Rise of Janata Party – Moraji Desai – Charan Singh.

Unit - XII

Re emergence of Indira Gandhi – operation Blue Star - Rajiv Era – New Education Policy.

Unit - XIII

Mandal Commission Report – Narasimha Rao - New Economic policy — Rise of BJP – Vajpayee.

Unit - XIV

Man Mohan Singh – NarendraModi- their Internal and External Policy - Problems of Terrorism – Contemporary Challenges.

Books for Reference:

1. Agarwal, S. - Press, Public Opinion and Govt. of India.
2. Ghai U.R - Foreign policy India
3. Appadurai.A - Essays in Indian Politics and the Foreign policy
4. Bipan Chandra - India After Independence
5. Biswa Chatterjee - Impact of Social Legislations on Social Change.
6. Drivedi, R.C. - New Strategy of Agricultural Development in India.
7. Jim Masselos - Creating a Modern India
8. Jayaprakash Narayanan - Towards Total Revolution
9. John Gilbert.G - Contemporary History of India
10. Menon.V.P. - The Story of Integration of Indian States.
11. Pranay Gupta - The Challenge of Change
12. Perceival Spear - Oxford History of Modern India
13. Palmer and Perkins - International Relations
14. Vekatesan .G - History of Contemporary India.
15. Mahajan V.D. - Modern Indian History From 1707 to the Present day
16. AnletSobithabai.W - Contemporary History of India (1947 – 2004 A.D)
17. Devanesan.A - Contemporary India Since 1947 A.D
18. Nadarajan.C - Social History of Modern Tamilnadu

Course Code	Title of the Course
32142	Core – XIII – INTELLECTUAL HISTORY OF TAMIL NADU

Course Objective:

- To know the sangam literature, poets and familiar poets
- To learn the pure Tamil movement and world Tamil Conference
- To understand the Tamil development and anti Hindi agitations

Course Outcome:

- Understand the activities during the period of Tamil development
- Learn the Tamil leaders participation in anti Hindi agitations and socio economic conditions
- Able to know the facts of Tamil culture and important leaders role to development.

BLOCK I: SANGAM LITERATURE AND ITS GROWTH

Unit - I

Intellectuals of SangamAge :Sagam Literature – Sangam Poets.

Unit - II

Thiruvalluvar – Avvaiyar – Tholkappiyar.

Unit - III

ElangoAdigal – Social and political thoughts

Unit - IV

Revival of Tamil language and Literature – Pure Tamil movement – MaraimalaiAdigal – ThiruVi.Ka.

BLOCK II: SOCIO – RELIGIOUS THOUGHTS OF TAMIL INTELLECTUALS

Unit - V

SundaramPillai - Anti – Hindi Agitation – World Tamil Conferences.

Unit - VI

Socio – Religious Thoughts of Tamil Intellectuals – VaikundaSwamigal – Vallalar.

Unit - VII

AyothidasPandithar – Sahajananda – Muthu Lakshmi Reddy.

Unit –VIII

Bharathiar – Bharathidasan.

BLOCK III: RELIGIOUS SAINTS AND ITS IMPORTANCE

Unit - IX

Religious Saints and their Intellectual contribution – Alwars and Nayanmars.

Unit - X

Thirumular – Ramanuja – Veeramamuivar.

Unit - XI

Caldwell – G.U.Pope – Robert – De- Nobili.

BLOCK IV: NON – BRAHMIN MOVEMENT AND LEADERS PARTICIPATION

Unit -XII

Non- Brahmin movement – causes – Justice party – Dravidian movement.

Unit - XIII

T.M.Nair.CNatesaMudaliar – P.Thiagarayachetti – Periyar EVR – A.T.Panneerselvam.

Unit - XIV

RamasamiMudaliar –Raja of Bobbli and Panagal -SoundaraPandian – AnnamalaiChettiar

Books for Reference:

1. KalapanaRajaRam (Ed) - History of Modern India
2. Ponnu.R - Sri Vaikundaswamigal and the struggle for Social equality in South India.
4. Veeramani .K - The History of the struggle for Social Justice in Tamil Nadu.
5. Bipanchandra - India's struggle for Independence.
- 6.Devanesan . A - History of Tamilnadu (up to 1995 A.D).
7. Jayapalan . N - Social and cultural History of Tamilnadu
8. FirozAlam - Great Indian Personalities
- 9.Venkatesan .G - History of Ancient Tamilnadu (300BC-1600 A.D)
10. Venkatesan.G - History of Modern Tamilnadu (1600 – 2011 A.D)
- 11.Nadarajan.C - Social History of Modern Tamil Nadu
- 12.Sivagnanam. M.P - Vallalar Kanda orumaippadu
13. Rajayyan.K - History of Tamilnadu 1565 to 1984 A.D

Course Code	Title of the Course
32143	ENVIRONMENTAL HISTORY

Course Objective:

- To learn the basic concepts, aware of the Environmental needs.
- To have an exposure about Clean and Green necessity.
- To know the tree planting and forest.

Course Outcome:

- Understand the Environmental factors for the society.
- Realize the role of Noise pollution and Degradation.
- Know about different types of forest and the benefits to the people.
- Able to develop forest area and action for the Government and Public.

BLOCK I: DEFINITION OF ECO AND ITS ROLE

Unit - I

Definition – Scope – Eco – system – Bondage between civilization and Ecology.

Unit - II

Natures Balance – Environment and Culture – conservation – Green House Effect.

Unit - III

Global warming – Ozone Depletion - Bio-Diversity.

Unit - IV

Environment in the Indian Cultural Tradition – Colonial Environment policy.

BLOCK II: FOREST AND ITS IMPORTANCE

Unit - V

Forest Land and Forest Management - Resistance system to forest Management.

Unit - VI

Forest movements from 1921 – 42 – Effects of Urbanisation and Industrialization - Impact on Nationalism.

Unit - VII

Environmental education – Formal and informal education – organization for environmental protection.

Unit - VIII

United Nations Environment Programme (UNEP) – Earth summit of 1992.

BLOCK III: ENVIRONMENTAL THREATS AND THE REASON

Unit - IX

Environmental Threats – Water Pollution – Air pollution.

Unit - X

Noise Pollution - Land Degradation.

Unit - XI

Deforestation- Hazardous Waste – Industrial pollution.

BLOCK IV: PROTECTION OF ENVIRONMENT MOVEMENT

Unit - XII

Environmental Movements – Chipco Movement – Silent valley movement.

Unit - XIII

Appiko movement - Protest against Narmatha project – Protective measures.

Unit - XIV

Government Legislations – Court Decisions – Role of NGOS – Role of Environmental Activities.

Books for Reference:

1. Armin Rosencraaz - Environmental law & Policy in India;
2. Chauhan I.S & Arun Chauhan, - Environmental Degradation;
3. Deependar Basu (Ed.) - Environment and Ecology., The Global Challenge,
4. Susila Appadurai - Environmental studies
5. Gareth Porter & Janet Welsh Prrows, - Global Environmental politics,
6. Kumaraswamy.K, -
7. Alagappamoses.A & Studies Vasanthy.M - Environmental
8. Kamal Nath, - India's Environmental Concerns
9. Thangamani .A & Shymala - A Text book of Environmental Thangamani studies
10. Rajkumar (Ed) - Environmental Pollution
11. Madhav Gadgil and - The Fissured Land: An Ecological History of India, Ramachandra Guha,
12. Pravinsheth, - Narmada Project: Politics of Eco Development

Course Code	Title of the Course
32144	WOMEN'S STUDIES

Course Objective:

- To understand History, Goals, Forms of Feminism, Vedic, Epic and Sangam Age.
- To understand women status from ancient to modern and familiar leaders in women.
- To understand Government policy for women in world and India level.

Course Outcome:

- Exposure women condition from India and World.
- Learn women affected problems and Government remedies.
- Acquire knowledge about dowry, divorce, suicide, etc.,
- Able to know the facilitating factors for women and the society.

BLOCK I: VEDIC WOMEN STATUS AND THE INDIAN MONARCH VIEWS

Unit - I

History of Feminism – Goals of Feminism – Forms of Feminism.

Unit - II

Women in Vedic, Epic and Sangam periods.

Unit - III

Women during Delhi sultanate, ijayanagar and Mugal Periods.

Unit - IV

Role of Women in the Freedom Movement – Velunachiyar - Jansi Rani Lakshmi Bai – Annie Besant.

BLOCK II: IMPORTANT WOMEN LEADERS AND THE ACHIEVEMENTS

Unit - V

Sarojini Naidu – Kasthuri Bhai Gandhi – VijayalakshmiPandit – Cap.Lakshmi.

Unit - VI

SuchethaKriplani and Indira Gandhi – Women's Movements and organizations in India – Formation and functions of Self Help Group .

Unit - VII

Government Policy Towards Women: Centre and State Governments – Social Welfare Programmes for Women after 1947.

Unit - VIII

Constitutional Laws for Women – Personal Laws – Enactment and Enforcement of Laws.

BLOCK III: PSYCHOLOGICAL AND SOCIAL FACTORS OF WOMEN

Unit - IX

Administrative, Legal, Psychological and Social factors.

Unit - X

International Women's Year – Decade for women 1975-85.

Unit - XI

Towards the Progress of Women - Changing Role of Women in contemporary India.

BLOCK IV: WOMEN ISSUES AND THE REMEDIES

Unit - XII

Problems of Women – Contemporary problems and issues relating to women – Dowry, Divorce – suicide.

Unit - XIII

Prostitution & sexual exploitation – discrimination, etc. – Problems of Working Women.

Unit - XIV

Crimes and violence on Women –foeticide, female infanticide, disparity at home, eve-teasing, ill treatment by relatives, etc, – Women and Mass Media.

Books for Reference:

- | | | |
|--------------------------------|---|---|
| 1. Chadially | – | Women in Indian Society |
| 2. Meera Desai | – | Women in Modern India. |
| 3. Haksar | – | Women and the Law |
| 4. Kapadia | – | Family and Marriage in India |
| 5. Kumari Jayawardane | – | Feminism & Naturalism in the Third World |
| 6. Malladi Subbamma | – | Women Tradition and Culture. |
| 7. Meera Desai & Vibhuti Patel | – | Indian Women – Change & Challenge. |
| 8. Rama Mehta | – | Social Legal Studies of Women in India |
| 9. Maithera Krishna Raj | – | Women & Society |
| 10. Manmohan Kaur | – | Women in India's Freedom Struggle. |
| 11. Gandhi .M.K | – | Woman and Social injustice |
| 12. Chattopadhyaya.K | – | The Awakening of Indian Womanhood |
| 13. Altekar.A.S | – | Position of women in Hindu Civilization from Pre-historic times to the present day. |
| 14. Laxmi Devi | – | Violence against women and related Law and Justice. |

M.A (Sociology)

Sl. No.	Course Code	Title of the Course	CIA Max.	ESE Max.	TO T Max	C Max.
FIRST YEAR						
I Semester						
1.	35111	Foundations of Sociology	25	75	100	4
2.	35112	Sociological Theories	25	75	100	4
3.	35113	Population Studies	25	75	100	4
4	35114	Research Methods and Statistics	25	75	100	4
		Total	100	300	400	16
II Semester						
5.	35121	Social Movements in India	25	75	100	4
6.	35122	Sociology of Modernization and Development	25	75	100	4
7.	35123	Sociology of Indian Society	25	75	100	4
8.	35124	Sociology of Media and Communication	25	75	100	4
		Total	100	300	400	16

SECOND YEAR**III Semester**

9.	35131	Indian Social Problems	25	75	100	4
10.	35132	Sociology of Ageing	25	75	100	4
11.	35133	Gender and Society	25	75	100	4
12.	35134	Rural and Urban Sociology	25	75	100	4
		Total	100	300	400	16

IV Semester

13.	35141	Human Resource Management	25	75	100	4
14.	35142	Ecology and Society	25	75	100	4
15.	35143	Social Welfare Administration	25	75	100	4
16	35144	Medical Sociology	25	75	100	4
		Total	100	300	400	16

2. Detailed Syllabi:

FOUNDATIONS OF SOCIOLOGY

FIRST SEMESTER

Course Code	Title of the Course
35111	FOUNDATIONS OF SOCIOLOGY

Objectives

- The Foundations of Sociology paper is intended to acquaint the students with sociology as a social science and the distinctiveness of its approach among the social sciences.
- It also introduces basic concepts and social processes which will enable even students without any previous exposure to sociology could acquire an interest in the subject and follow it.

Outcomes of the course:

- To make student understand the scope and development of Sociology as a scientific discipline.
- To understand basic concepts and their perspectives
- The course will help the students to answer the questions in competitive exams viz., SET, NET, etc. successfully.

Contents:

BLOCK I: Origin and Development of Sociology

UNIT I

Origin and Development of Sociology as an Independent Discipline

UNIT II

Nature and Scope - Its Relationship with Other Social Sciences - Uses of Sociology

UNIT III

Basic Concepts of Sociology - Society, Community and Association

BLOCK II: Individual and Society, Theories about the origin of Human Society

UNIT IV

Individual and Society: Theories about the Origin of Human Society

UNIT V

The Role of Heredity and Environment in the Development of Individual.

BLOCK III: Culture, Socialization and Social Action

UNIT VI

Culture: Characteristics and Functions, Material and Non-material Culture, Cultural Lag, Acculturation, Relationship between Culture and Personality.

UNIT VII

Socialization: Importance - Process - Stages - Agencies - Theories.

UNIT VIII

Social Action and Interaction: Social Relationships and Social Processes.

BLOCK IV: Social Processes, Social Groups and Social Organisations

UNIT IX

Associative/ Conjunctive: Cooperation, Accommodation, Assimilation, Diffusion, and Disassociative / Disjunctive: Competition and Conflict.

UNIT X

Social Groups: Primary and Secondary Groups - Characteristics - Functions - Differences - Reference Groups.

UNIT XI

Social Organizations: Formal and Informal - Characteristics and Functions.

UNIT XII

Social Institutions - Characteristics - Family and Marriage – Political – Education - Economic - Religious Institutions.

BLOCK V: Social Stratification and Social Control

UNIT XIII

Social Stratification: Characteristics and Functions - Estate, Caste and Class Systems, Status.

UNIT XIV

Social Control: Types of Social Control - Formal and Informal. Agencies of Social Control.

References:

- **Anderesen, M.L. & Taylor, H.F.** – *Sociology the Essentials*. Wadsworth Thomson Learning, 2001.
- **Bierstedt, R.A.** - *The Social Order*. New York: McGraw-Hill, 1963.
- **Bottomore, T.B.** - *Sociology A guide to Problems and Literature*. Blackie and son (India) Ltd., 1972.

- **Brijjak, G.J.** – *Sociology: Cultural Diversity In A Changing World*. London: Alley and Baccon, 1992.
- **Broom, L., and Selznick, P.** – *Sociology*. New York: Harper and Row, 1970.
- **Davis, K.** - **Human Society**, New York: Macmillan, 1948.
- **Calhoun, C., Light, D., Keller, S. and Harper, D.** - *Sociology*. New York: McGraw-Hill, Inc, 1994.
- **Defleur, M.L., D'Antonio, W.V. and Defleur, L.B.** – *Sociology of Human Society*.
- **Giddens, A.** - *Sociology*, New York: Harcourt Brace Jovanovich, 1982.
- **Popeneo, D.** - *Sociology*, Eighth Edition. Englewood Cliffs: Prentice Hall, 1991.
- **Giddens, F.H.** - *The Principles of Sociology*. Jaipur: Prentice Hall, 1990.
- **Hess, B.B., Markson, E.W., & Stein, P.J.** – *Sociology*. Third Edition. New York: Macmillan Publishing Co., 1988.
- **Johnson, H.M.** - *Sociology A Systematic Introduction*, Allied Publishers.
- **Macionis, J.** - *Sociology*. New Jersey: Prentice Hall, Englewood Cliffs, 1995.
- **Maclver, M. and Page, C.H.** - *Society*. New York: Long and Smith, 1931.
- **Oakland, N.J.**: Scott, Foresman Company Glenview, Illionis, 1976.
- **Ritzer, G. Kammeyer, K.C. and Yetman, N.R.**- *Sociology Experiencing A Changing Society*, Allyn and Baco - , Boetol – Vistas.
- **Rose, P.T., Glazer, M. and Glazer, P.M.** - *Sociology Inquiring into Society*. New York: Canfield Press, 1976.
- **Rosenberg, B. and Coser, L.A.** - *Sociological Theories*. New York: Macmillan, 1976.
- **Shepard, J.M.** – *Sociology*. New York: West Publishing Company, 1981.
- **Smelser, N.J.** - *Sociology*, Sage Publication, Delhi.
- **Stewart, E.W. and Glynn, J.A.** - *Introduction to Sociology*. New York: McGraw-Hill, 1985.
- **Stockard, J.** - *Sociology Discovering Society*. Australia: Wadsworth Thomson Learning, 2000.
- **Thio, A.** - *Sociology A Brief Introduction*. London: Allyn and Bacon, 2000.
- **Schaefer, R.T.** *Sociology*. New York: McGraw-Hill Inc. 1992.

Course Code	Title of the Course
35112	Sociological Theories

Objectives

- The objective of this course will be development of theorization in Sociology with regard to understanding of the social reality in different perspectives by different school of thought.
- This course is intended to introduce the students to the substantive, theoretical and methodological issues which have shaped the sociological thinking in the latter half of the 20th century, and which continue to concern the practitioners of sociology today.

Outcomes of the course:

- The main focus will be on origin and development of functionalism and conflict theories, symbolic interactionism, phenomenology, ethno methodology.
- Provide better understanding about the theory of structuration, rational choice theory, Postmodernism.
- Post Marxist theories etc. It is necessary for the students to evaluate the relevance and significance of the perspectives listed for understanding society in general and society in India in particular.

Contents:

BLOCK I: Introduction of Social Thought and Sociological Theory

UNIT I

Introduction of Social Thought and Sociological Theory- Central Problems of Sociological Theory

UNIT II

Levels of Theorization in Sociology - Empirical Generalization - Middle Range Theories - Grand Theories - Theoretical Perspectives.

BLOCK II: Origin and Development of Functionalism

UNIT III

Origin and Development Functionalism.

UNIT IV

Analytical Functionalism: Talcott Parsons: Structure of Social Action

UNIT V

Social System - Functional Pre-requisites - Pattern Variables.

UNIT VI

Empirical Functionalism: Robert K. Merton: Theory of Social Structure

UNIT VII

Manifest and Latent Functions. Reference Group - Relative Deprivation

BLOCK III: Conflict and Dialectical Conflict Theory

UNIT VIII

Conflict Theory: Marxism and Conflict Tradition – Simmel’s Conflict Theory

UNIT IX

Dialectical Conflict Theory of Dahrendorf - Conflict Functionalism: Social Functions of Conflict - Louis A. Coser.

UNIT X

Habermas -Theory of Communicative Action-Public sphere -Life world L.Althusser - Structural Marxism -Epistemological break-Structural Causality - Structure of dominance

BLOCK IV: Symbolic Interactionism, Phenomenology and Ethnomethodology

UNIT XI

Symbolic Interactionism: Historical Background - C.H. Cooley - George H. Mead - Herbert Blumer.

UNIT XII

Phenomenology and Ethnomethodology - A. Schutz, Peter Berger, Gluckmann and H. Garfinkel. Exchange Theory - Peter.M.Blau - Process of Exchange- Values, Norms – Social.

BLOCK V: Exchange of Power and Theory of Structuration

UNIT XIII

Exchange-Power - Study of Small Groups. George Homans: Elements of Behavior - The External System - Internal System.

UNIT XIV

Theory of Structuration M. Facoult’s Postmodernism- Derrida , Post-structurlism and Post – Post Marxist Theories.

References:

- **Abraham, F.** - Sociological Theory. New Delhi: Oxford University Press, 1982.
- **Adams, B.N. & Sydie, R.A.** - Contemporary Sociological Theory, New Delhi: Pine Forge Press, 2002.

- **Belmont:** Wadsworth Publishing Co., 1995.
- **Best, S.** –A beginner’s guide to Social Theory. London: Sage Publications, 2003.
- **Burger, P. & Luckman, T.** – The Social Construction of Reality, London: Allen Lane, 1967.
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- **Cohen, P.S.** - Modern Social Theory. London: Heimemann, 1968.
- **Coser, L.A.** - Masters of Sociological Thought (2nd Ed). New York: Harcourt Brace Govanovich, 1977.
- **Coser, L.A. & Rosemberg, B.** – Sociological Theory: A Book of Readings, Fourth Edition. New York: Macmillan Publishing. 1970.
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- **Garfinkel, H.** – Studies in Ethno methodology. Englewood Cliffs: Prentice- Hall, 1967.
- **Giddens, A.** - A Contemporary Critique of Historical Materialism. London: The Macmillan Press Ltd, 1981.
- **Giddens, A.** – Central Problems in Social Theory Action, Structure and Contradiction in Social Analysis. London: The Macmillan Press Ltd, 1979.
- **Haralambos & Holborn** - Sociology Themes and Perspectives, Fifth Edition. London: Collins, 2000.
- **Haralambos, M. & Heald, R.** – Sociology Themes and Perspectives. New York: Oxford University Press, 2005.
- **Martindale, D.** – The Nature & Types of Sociological Theory. New Delhi: Rawat Publications, 2001.
- **Merton, R.K.** - Social Theory and Social Structure, New York: Free Press, 1968.

**POPULATION STUDIES
FIRST SEMESTER**

Course Code	Title of the Course
35113	Population Studies

Objectives

- The course aims to familiarize the students about various demographic factors that contribute to population change and how they influence and are influenced by various social and economic institutions.
- This course is intended to introduce the sources and Demographic data as well as indicators to measure various demographic factors will be discussed.

Outcomes of the course:

- To equip the students understand the conceptual clarity and theoretical framework and perspectives with regard to demography.
- To make the students understand the linkages between various social institutions and social process on the one side and demographic outcomes and processes on the other.
- To make them understand basic concepts and their perspectives.
- The course will help the students to answer the questions in competitive exams viz., SET, NET, GATE, etc. successfully.

Contents:

BLOCK I: Demographic determinants of Population Change

UNIT I

Demographic determinants of population change – births, deaths, migrants, marriages

UNIT II

Concept of natural increase of population and growth of population - Measurement and indicators of demographic determinants: fertility, mortality, migration, marriage

UNIT III

Data sources – census – vital registration system – national sample surveys – sample registration system – adhoc surveys – standard fertility survey – national family health survey.

BLOCK II: Population Theories and Social Theory of Population Change

UNIT IV

Population theories – History and development of population theories– Mercantilist and related theories

UNIT V

Theories of Malthus and his immediate predecessors –socialist and Marxist writings – Growth Theories

UNIT VI

Social Theory of Population Change – Demographic transition theory - Theories of Ester Boserup and Julian Simon – Trends in Population Growth – India World states in India

BLOCK III: Theories of Fertility and Fecundity and Concepts

UNIT VII

Concepts of fertility and fecundity- theory of marriage and family - social structure and fertility – role of intermediate variables (Davis and Blake)

UNIT VIII

Economic theory of fertility (Becker) – socio economic theory of fertility (Leibenstein and Easterlin) - regional variations in fertility levels in India. Concepts of mortality,

UNIT IX

Life expectancy – components of mortality, determinants of infant and child mortality.

UNIT X

Causes & death, life & working years lost, Differentials in mortality & morbidity

BLOCK IV: Concepts of Migration and Types Causes of Migration

UNIT XI

Concepts of migration: types of migration, forced migration, political, economic and social consequences

UNIT XII

In-migration, out-migration, immigrants, emigrants – theories of migration – Ravenstein's laws of migration

UNIT XIII

Everette Lee's perspectives on migration - Push pull theories of migration – social process of migration – international migration.

BLOCK V: Indian Population Policy

UNIT XIV

Indian Population Policy- kinds of population policy, Fertility Influencing policy, Anti-National policy, Population Education.

References:

- **Caldwell JC, Reddy PH, Caldwell P.** - *The social component of mortality decline: an investigation in South India employing alternative methodologies.* Population Studies, 1983 July; 37(2):185-205.
- **Caldwell, John C.** - "The Global Fertility Transition: the Need for a Unifying Theory". *Population and Development Review*, Vol. 23, No. 4, December 1997, pp. 803-812.
- **JC Caldwell**, (Several other articles) Tim Dyson and others in *Population and Development Review*. (Available in the internet).
- **Lassaonde, Louise** - *Coping with Population Challenges*. London: Earthscan, 1997.
- **Massey, Douglas** et al. - "Theories of International Migration". *Population and Development Review* 19:3, 1993
- **Massey, Douglas** et al. - *Return to Aztlan: The Social Process of International Migration from Western Mexico* (Studies in Demography, No 1). March 1990.
- **Nam, Charles B** - *Population and Society*. Boston: Houghton Mifflin, 1968.
- **Hawthorn, Geoffrey** – *The Sociology of Fertility*. London: Collier-Macmillan, 1970
- **Heer, David M.** - *Society and Population*, Englewood Cliffs. Prentice Hall, 1975
- **Weeks, John R.** - *Population: An Introduction to Concepts and Issues*". Belmont, California: Wadsworth, 1977, pp.1-324.

RESEARCH METHODOLOGY AND STATISTICS

FIRST SEMESTER

Course Code	Title of the Course
35114	Research Methods and Statistics

Objectives

On completion of the course the students will be able to

- This Paper aims to provide exposure to the fundamentals of various research techniques and methods (both quantitative and qualitative).
- This paper tries to build upon the basic assumptions in adopting different methodologies for different kinds of research themes.

Outcomes of the course:

- Research Methodology paper will bring out certain ideas underlying the emergence of scientific methods in social sciences and its theoretical delineations are introduced.
- The course will attempt to sensitize the post-graduate students to develop a critical outlook at the existing perspectives and methods and to evolve conceptual clarity, which can lead them in their future research.
- Teaching certain quantitative methods, statistical techniques and qualitative methods to collect and analyze the data would help them organize and analyze the information gathered by them.

Contents:

BLOCK I: Introduction to Research, Science and its Characteristics, Applicability of Scientific Condi

UNIT I

Introduction to Research: Definition Scientific Research: Science and Its Characteristics. Features,

UNIT II

Science and Its Characteristics. Features, Purpose and Assumptions of Scientific Method.
Steps in Scientific Method.

UNIT III

Applicability of Scientific Method to the Study of Social Phenomena. Theory and Research. Induction and Deduction.

BLOCK II: Research Problem, Concepts and Review of Literature, Hypothesis

UNIT IV

Research Problem: Formulation, Conditions and Considerations.

UNIT V

Concepts: Meaning, Categories, and Operationalization. Variables: Meaning, Types, and Measurement

UNIT VI

Review of literature: Scope and Purpose of literature review, Processes and sources of reviewing the literature,

UNIT VII

Hypothesis: Functions, Conditions for a Valid Hypothesis, Formulation of Hypothesis, Types and Forms of Hypothesis, Hypothesis Testing.

BLOCK III: Research Design, Sampling Collection of Data

UNIT VIII

Research Design: Need for Research Design, Features. Types: Exploratory, Descriptive, Explanatory, Experimental and Evaluative.

UNIT IX

Sampling: Census, Sample Survey, Characteristics and Implications of Sample Design, Sampling criteria, sampling frame, sampling error.

UNIT X

Types of Sampling: Probability and Non-Probability Sampling. Criteria for Selecting a Sampling Procedure.

UNIT XI

Collection of Data: Primary and Secondary Data, Sources of Secondary Data. Methods of Data Collection: Interview, Schedule, Questionnaire, Observation, Content Analysis and Case Study.

BLOCK IV: Measurement and Scaling Techniques measure of Central Tendency

UNIT XII

Measurement and Scaling Techniques: Meaning, Need for Scales, Problems of Scaling, Methods of Scale Construction - Likert, Thurstone and Guttman Scales. Bogardus Scale. Reliability and Validity.

UNIT XIII

Measures of Central tendency: – Mean, Median, Mode-Measures of Dispersion: – Range, Quartile Deviation, Mean Deviation and Standard Deviation-Correlation Analysis: Karl Pearson's Coefficient of Correlation, Rank Correlation and Association of Attributes, Test of Significance.

BLOCK V: Preparation of a Research Report

UNIT XIV

Preparation of a Research Report: Format, Footnotes, Tables and Figures, Bibliography, Index, Editing and Evaluating the Final Report. Analysis of Data: Introduction, Importance, Scope, Function and Limitations.

References:

- **Babbie, Earl.** - *The Practice of Social Research*, (Second Edition). Belmont: Wadsworth Publishing, 1979.
- **Bailey, K.D.** - *Methods of Social Research*. New York: The Free Press, 1982.
- **Barker, T.L.** - *Doing Social Research*. New York: McGraw-Hill, 1999.
- **Durkheim, E.** - *The Rules of Sociological Method*, New York: Glemcol, 1938.
- **Seltiz, C. et al.** - *Research Methods in Social relations*. Free Press: New York, 1959.
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- **Holsti, O.R.** - *Content Analysis for the Social Sciences and Humanities*. Addison-Wesley: Reading, Mass, 1969.
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- **Laws, S.** - *Research for Development*. New Delhi: Vistaar Publications, 2003.
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- **Schutt, R.K.** - *Investigating the Social World: The Process and Practice of Research*,
- **Schwartz, H. & Jacobs, J.** - *Qualitative Sociology A Method to the Madness*. New York:
- **Silverman, D.** - *Qualitative Methodology & Sociology*. England: Gower, 1985.
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- **Vaus, D.A.** - *Surveys in Social Research*. New Delhi: Rawat Publications, 2003.
- **Weber, Max.** - *The Methodology of Social Sciences*. New York: Glencol, 1949.

SOCIAL MOVEMENTS IN INDIA

SECOND SEMESTER

Course Code	Title of the Course
35121	Social Movements in India

Objectives

On completion of the course the students will be able to

- This course is intended to introduce the students; how the social movements have shaped the world we live and continue to do.
- Further the course continued to disseminate broadly with regard to the impact of social movements on society and social structure.

Outcomes of the course:

- To understand the transformation occurred in the society due social movements.
- To know the theoretical perspectives of social movements and its political implications.
- It is necessary for the students to evaluate the relevance and significance of the social movements and the reforms it brought to the society.

Contents:

BLOCK I: Social Movements Concept and Definition, Approaches

UNIT I

Social Movements – Concept, Nature, Definitions, Typologies

UNIT II

Approaches of Social movements

BLOCK II: Role and Theories of Social Movement

UNIT III

Role of social reform movements in India

UNIT IV

Theories of Social Movements.

UNIT V

UNIT VI

Political Process Theory-Structural Strain Theory- New Social Movement Theories

BLOCK III: Movements of the Deprived Sections

UNIT VII

Movements of the deprived sections- Subaltern movement: Meaning and importance

UNIT VIII

Dalit & Tribal social movement in India.

UNIT IX

Movements of the displaced & Project affected- Civil Liberties & Human Rights movement

BLOCK IV: New Social Movements

UNIT X

New Social Movements: Meaning and nature

UNIT XI

Peasant movement- Feminist movement- Environment movement – Youth movement

UNIT XII

Social Movements, Socio-Political implications

BLOCK V: Impact of Globalization and Social Movements

UNIT XIII

Impact of Globalization on social movements

UNIT XIV

Social Movements and Social change

References:

- **S. Kothari**, Social Movements and Redefinition of Democracy, Boulder Colorado, West views Press, 199.
- **T. K. Oomen**, Protest and Change, Studies in Social Movement, New Delhi, Sage, 1990.

- **S. Ghose**, *The Renaissance to Militant Nationalism*, Bombay, Bombay, Allied Publishers, 1969
- **K. Jones**, *Socio Religions Reform Movement in British India*, Cambridge Uni. Press, 1984.
- **Omvedt G.** – *New Social Movements in India*, Sage, Delhi, 1999
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- **Alvi, Hamza** (1965) “Peasants and Revolution”, *the Socialist Register*, ed. By Ralph Miliband
- **Aurora, G. S.** (1981) “Social Movements in India, A Review Article”.
- **Dhanagre, D. N.** (1974) “Peasant Movements in India, 1920- 1950, Delhi Oxford University Press.
- **Desai, A. R.** (1978) *Peasant Struggles in India*, Bombay: Oxford University Press.
- **Malik, S. G. (ed.)** (1978) *Indian Movements: Some Aspects of Dissent, Protest and Reform*, Simla: Indian Institute of advanced Study
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- **Buechler, S.M.** (1995). New social movement theories. *The Sociological Quarterly*, 36, 441-464. Retrieved December 5, 2006, from <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1533-8525.1995.tb00447.x>
- **McAdam, D., McCarthy, J.D., & Zald, M.N.** (1988). Social movements. In N. J. Smelser (Ed.), *Handbook of sociology* (pp. 695-737). Newbury Park, CA:Sage Publications.
- **Tilly, C.** (2004). *Social movements, 1768-2004*. Boulder, CO: Paradigm Publishers

SOCIOLOGY OF MODERNIZATION AND DEVELOPMENT

SECOND SEMESTER

Course Code	Title of the Course
35122	Sociology of Modernization and Development

Objectives

On completion of the course the students will be able to

- Social change has always been a central concern of sociological study. More recently it has gained in greater salience partly because of its unprecedented rapidity and partly because of its planned character.
- Not surprisingly, development has emerged as pronounced concern and as a remarkable feature of our times. Accordingly, the relevance of the course Sociology of Change and Development can hardly be overemphasized. The following objectives are:

Outcomes of the course:

- To provide conceptual and theoretical understanding of social change and development as it has emerged in sociological literature.
- This paper also aim is to address the factors, sources and process of social change and its relevance in the everyday social reality.
- To prepare the students for professional careers in the field of development planning, including governmental, non-governmental and international agencies engaged in development.
- This paper helps the students to be encouraged to participate in workshops to critically examine the existing indicators of human development and to formulate alternatives sets of indicators of human development, social development and sustainable Development.

Contents:

BLOCK I: Basic Concepts of Modernization and Development

UNIT I

Basic Concepts: Change, Evolution, Growth, Development, Progress

UNIT II

Social Change versus Cultural Change, Change versus Interaction, Short versus Long-run Changes

UNIT III

Whole Societies versus Parts, Description versus Analysis, Rate of Change, Direction, Forms, Source of Social Change - Planned Change

BLOCK II: Factors and Theories of Social Change

UNIT IV

Factors of Social Change: Geographic, Demographic, Political, Technological, Economic, Ideological and Ecological

UNIT V

Theories of Social Change - Mono-causal and Multi-causal Theories, Evolutionary, Cyclical, Linear, Equilibrium.

UNIT VI

Social Change in Indian Society, Trends of Change, Process of Change

BLOCK III: Concept of Sanskritization, Modernization, Secularization

UNIT VII

Concept of Sanskritization, Westernization, Modernization, Secularization

UNIT VIII

Globalization, Privatization and Their Impact in socio economic and political aspect in India

UNIT IX

Information Technology and the Network Society. Social Movements - Ideology and Mass Mobilization, Impact of Revolutionary and Reform Movements.

BLOCK IV: Changing Concept of Development

UNIT X

Changing Conceptions of Development: Economic Growth, Human Development, and Social Development.

UNIT XI

Quality of Life and Indices, Sustainable Development

UNIT XII

Planned Development as Diffusion of Innovations.

BLOCK V: Social Structure and Development

UNIT XIII

Social Structure and Development: Structure as Facilitator / Barrier

UNIT XIV

Development and Implications of Globalization - Ethnicity as Social and Cultural Identity.

References:

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- **UNDP**, *Sustainable Development*, New York: OUP
- **World Bank**, *World Development Report*, New York: OUP.

SOCIOLOGY OF INDIAN SOCIETY

SECOND SEMESTER

Course Code	Title of the Course
35123	SOCIOLOGY OF INDIAN SOCIETY

Objectives

On completion of the course the students will be able to

- To give knowledge to the students about the composition of Indian society and problems of unity and diversity.
- To equip the students about the Indian social structure and various institutional patterns. To provide the students with an overview of the Classification and Distinctive features of Tribal Communities and system of social stratification among different social groups.
- It is presumed that the student has some familiarity with Indian society by virtue of the fact that he is a member of it and that he has observed and experienced some facets of it.

Outcomes of the course:

- This Course aims to explore the basic institutions and structure of Indian Society by presenting a comprehensive, integrated and empirically-based profile of Indian society.
- The continuity between the present and the past is an evident feature of Indian society. Though this continuity is reflected in the structure of the course, the focus is on the contemporary Indian Society.

Contents:

BLOCK I: Composition of Indian Society

UNIT I

Composition of Indian Society: Racial, Linguistic, Cultural, and Religious Groups.
Problems of Unity and Diversity

UNIT II

Hindu Social Organization: Purusharthas, Ashramas, Varna, Jati, etc., Hindu View of Life

UNIT III

Caste System: Definition, Structure, Characteristics, Sanctions, Functions, Theories on Origin

UNIT IV

Structural and Functional Changes in Caste System, Mobility in Caste System

UNIT V

Problems of Weaker and Marginalized Sections in India

BLOCK II: Kinship, Marriage and Family, Gender Roles

UNIT VI

Kinship: Definition, Types of Kinship, Degrees of Kinship, Lineage, Kinship Usages, Kinship Patterns / Terms

UNIT VII

Marriage: Definition, Types and Forms, Characteristics, Functions, Changes in the Marriage System, Legislation and Its Impact on the Institution of Marriage

UNIT VIII

Family: Definition, Structure, Functions, Classification, and Changes in Structure and Functions of Family

UNIT IX

Gender Roles, Hegemonic Relations between Men and Women.

BLOCK III: Tribal Community Characteristics and Features

UNIT X

Tribal Community: Geographical Distribution, Classification and Distinctive features of Tribal Communities

UNIT XI

Tribes and Castes - Diffusion, Acculturation, Problems of Integration and Contraculturation

BLOCK IV: Rural Community: Basic Characteristics and Features

UNIT XII

Rural Community: Bases, Characteristics, Jajmani System - Features, Changes

UNIT XIII

Power Structure and Leadership Pattern - Bases, Functions, Emerging Trends, Values, Norms, Social Control, Agencies and Means

BLOCK V: Urban Community: Basic Characteristics and Features

UNIT XIV

Urban Community: Characteristics of Urban Community, Urbanism and Urbanization,
Rural Urban Differences and Continuum

References:

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SOCIOLOGY OF MEDIA AND COMMUNICATION

SECOND SEMESTER

Course Code	Title of the Course
35124	Sociology of Media and Communication

Objectives

On completion of the course the students will be able to

- This course is intended to introduce the students; how the media have connect the world we live and continue to do.
- Further the course continued to disseminate broadly with regard to the impact of sociology into the media and communication.

Outcomes of the course:

- To understand the transformation occurred in the society due media and communication.
- To know the theoretical perspectives of media and communication and its sociological concepts.
- It is necessary for the students to evaluate the relevance and significance of the media and communication and the reforms it brought to the society.

Contents:

BLOCK I: Communication : Meaning, Definition Nature and Scope, Types and Models of Communication

UNIT I

Communication: Meaning, Definitions, Nature and Scope – Elements of Communication – Communication Act – Sender – Message – Channel – Receiver – Effects – Feedback – Communication Process – Communis – Human Relationship.

UNIT II

Types of communication - Intrapersonal – Interpersonal - Group – Mass Communication and Mass line Communication – Functions of Communication – Effects.

UNIT III

Models of Communication: - Barriers - Hypodermic and One Step Flow - Harold. D. Lasswell, Braddock, Shannon and Weaver, Osgood and Wilbur Schramm, Wilbur Schramm and Hellical Dance Model.

BLOCK II: Theories, Characteristics and Differences of Communication

UNIT IV

Theories of communication: Social Responsibility and Authority.

UNIT V

Characteristics and Differences in Communication mode - Interpersonal and Mass Communication.

BLOCK III: Human Communication and Classification of Media

UNIT VI

Human Communication – Characteristics – Contents – Language – Meanings – Talent – Manifest – Contextual Structural Meanings.

UNIT VII

Classification of Media – Various Types – Traditional Media – Classical and Folk Media – Modern Media.

BLOCK IV: Origin and Growth of Mass Media in India

UNIT VIII

Origin and growth of mass media in India - Origin of mass media: Press –Film– Television – Internet - Cellular Phone - SMS – MMS - 2G -3G – 4G - Video Conferencing.

UNIT IX

Mass Communication – Mass Concepts – Characteristics of Mass Audience – Typology of Audience – Bauer’s Concept.

BLOCK V: Communication and the Process of Diffusion, Technology and Communication

UNIT X

Communication and the process of diffusion - Two step flow and the role of opinion leaders in the process of diffusion.

UNIT XI

Technology and communication - Communication Technology and Social Change - Formation of Public Opinion, Propaganda.

BLOCK VI: Role of Communication in Development of Digital Divide, Functions of Mass Media, Sociological Dimensions

UNIT XII

Role of Communication in Development of Digital Divide.

UNIT XIII

Functions of Mass Communication – Mass Society – Socialisation Process – Mass Culture – McLuhan's Global Village Concept – Global Culture.

UNIT XIV

Sociological Dimensions – Scope and functions of communication in the society-social aspects in shaping communication behavior - Influence of socio-cultural institutions – Family.

References:

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INDIAN SOCIAL PROBLEMS

THIRD SEMESTER

Course Code	Title of the Course
35131	Indian Social Problems

Objectives

On completion of the course the students will be able to

- To sensitize the students the perspectives of emerging social issues and problems of contemporary society.
- Making them to understand perspectives of social problems and identifying causatives, so that they will be in a position to arrive the factual remedies for reducing/ eliminating / preventing from their perspectives.

Outcomes of the course:

- Learners will able to understand the concept how society is undergoing rapid and massive changes.
- Learners will understand many of these changes are such that they tend to call into question the ages-old social norms and practices thus giving rise to some critical social issues and problems.
- The course is designed to identify and analyze some of emerging issues and problems from sociological perspectives.

Contents:

BLOCK I: SOCIAL PROBLEMS: DEFINITION, NATURE AND CHARECTERISTICS, FUNCTIONALISM, SOCIAL DISORGANISATION

UNIT I

Social Problems: Definition, Nature and Characteristics

UNIT II

Functionalism, Conflict theory, and Interactionism.

UNIT III

Social Disorganization: Meaning, Characteristics and Types.

BLOCK II: APPROACHES: PATHOLOGY, PROBLEMS OF SOCIAL ORDER AND JUVENILE DELINQUENCY

UNIT IV

Approaches: Pathology, Disorganization and Deviance

UNIT V

Problem of Social Order: Social Change and Social Control

UNIT VI

Juvenile Delinquency, Alcoholism and Drug Addiction, Prostitution, unemployment, Crime and cyber crime.

BLOCK III: PERSONAL DISABILITIES: CONCEPT, TYPES, FAMILY PROBLEMS, WOMEN RELATED PROBLEMS

UNIT VII

Personal Disabilities: Concept, types, legislation, Physical and Mental differently able, Health Problems - AIDS

UNIT VIII

Family Problems: marriage, divorce, Child Related - Child Abuse and Neglect.

UNIT IX

Woman Related Problems - Abuse, Violence, and Problems of Working Women.

BLOCK IV: ELDERLY RELATED PROBLEMS, COMMUNITY PROBLEMS AND NATIONAL PROBLEMS

UNIT X

Elderly Related Problems - Abuse and Avoidance, Intergenerational Conflict, Marital Conflict, Family Dissolution and legislation.

UNIT XI

Community Problems: Social Disabilities, Social Exclusion, Group Conflicts - Inter-caste Conflicts

UNIT XII

National Problems: Illiteracy, Poverty, Unemployment, Ethnic/Group Conflicts, Regionalism, and Extremism.

BLOCK V: GLOBAL PROBLEMS AND HUMAN AGENCY: STATE, PARTIES AND MOVEMENTS

UNIT XIII

Global Problems: Environment Problems, Displacement and Resettlement.

UNIT XIV

Human Agency: State, Parties, Movements, Activists, Moral entrepreneurs, Academics & social researchers, Media, Helping Professionals.

References:

- **Ahuja, R** - *Social Problems in India*. New Delhi: Rawat Publications, 1997.
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SOCIOLOGY OF AGEING

THIRD SEMESTER

Course Code	Title of the Course
35132	Sociology of Ageing

Objectives

On completion of the course the students will be able to

- To understand the concept of Aged and problems of Aging in the socio-economic context.
- To study the traditional ways of accommodating the aged population in the main streams of family and community life and to see how far they could cope up within in the modern society with regard to social support and formal and informal networks.
- And to know about Successful Aging with respect to physical, economic, social and cultural capital for successful Aging.

Outcomes of the course:

- The worldwide trends indicate that the proportion of aged people in the populations of different societies is ever increasing.
- This has far reaching socio-economic and even political implications for the societies across the world. It has therefore become essential to study the problems created by increasing aging population, as well as, the problems of aged people in the society.

Contents

BLOCK I: AGED IN SOCIETY: CONCEPT, STATUS RIGHTS AND OBLIGATIONS OF AGED AND SOCIAL SUPPORT

UNIT I

Aged in Society: Concept, Status, Characteristics and Problems - Demographic and Socio-economic context, Needs.

UNIT II

Rights and Obligations of Aged - Cultural and sub cultural variations in values regarding the Aged

UNIT III

Social Support: Emotional, Instrumental, Financial, Service, Informational, companionship.

BLOCK II: POSITIVE AND NEGATIVE SUPPORT FAMILY STRUCTURE, INFORMAL NETWORKS AND CHANGING FAMILY AND HOUSEHOLD PATTERN

UNIT IV

Positive and Negative Support. Family Structure, Ethnicity, Financial Resources as Factors

- Economics of Aging: -Income, Poverty, Housing.

UNIT V

Informal Networks: Family and Kinship Ties, Friendship and Neighborhood Ties.

UNIT VI

Changing Family and Household Pattern - Composition, Role Relationships, and Living Arrangements and Emerging Needs.

BLOCK III: INTERGENERATIONAL RELATIONSHIPS AND FORMAL NETWORKS

UNIT VII

Intergenerational relationships - Filial Responsibility, Relationships between Grandparents and Grandchildren. Types of Reciprocity.

UNIT VIII

Elderly as Support Providers: Nature and Extent of Support Extended by Elderly to the Family, Friends, Neighbours, Community and Society

UNIT IX

Formal Networks: Links with the Community - Engagement in Community Life, Levels of Connections in Community Life, Establishment of Relationships

BLOCK IV: FACTORS AFFECTING THE LINKS, INSTITUTIONAL RELATIONSHIPS AND SOCIAL EXCLUSION AND NEGLECT OF THE AGED

UNIT X

Factors Affecting the Links. Declining Role of Communities.

UNIT XI

Institutional Relationships - Ties with Institutions in Everyday Life and in Emergencies, Levels of Confidence in Institutions- Old age homes

UNIT XII

Social Exclusion and Neglect of the Aged.

BLOCK V: CARE TO THE ELDERITY AND LEGISLATION AND SCHEMES AVAILABLE IN AGED

UNIT XIII

Care to the Elderly: Personal Care, Healthcare, Household Care

UNIT XIV

Legislation and Schemes available for aged

References:

- **Anderson, M.** (Ed) - *Sociology of the Family*, Harmondsworth: Penguin Books Ltd., 1971.
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GENDER AND SOCIETY

THIRD SEMESTER

Course Code	Title of the Course
35133	Gender and Society

Objectives

On completion of the course the students will be able to

- The objective is to trace the evolution of gender as a category of social analysis in the late twentieth century. Major debates that have emerged are also outlined. The format provides for a comparative perspective in so far as the first part encompasses the developed and the developing countries while the second part revolves around issues concerning Indian women.
- It is hoped that exposure to the course will lead to a better understanding of the social phenomena with regard to gender.

Outcomes of the course:

- The recent sociological research has given special importance to the various new thrust areas of interest; here the social construction of gender is not an exception.
- This course plan focuses on the emergence of women's movements and eventually women's studies in the context of feminist thought and critiques of sociological theories and methodologies.

Contents:

BLOCK I: SOCIAL CONSTRUCTIONS OF GENDER, NATURE AND GENDER AND PRIVATE-PUBLIC DICHOTOMY AND SEXUAL DIVISION OF LABOUR

UNIT I

Social Construction of Gender: Gender and Biology, Equality and Equity.

UNIT II

Nature and Gender, Gender Identity and Self Image, Gender Roles, Segregation and Ranking. Sociological Analysis of Gender

UNIT III

Private-Public Dichotomy and Sexual Division of Labor. Ideology and Gender, Sex Preference, Declining Sex Ratio and Socio-cultural Implications

BLOCK II: CONCEPTS OF THEORIES: FEMINISM – MEANING, RADICAL FEMINISM, EMERGING CONCEPT OF FEMINISM, STATUS OF WOMEN IN INDIA

UNIT IV

Concepts of theories : Feminism – meaning, radical feminism, Liberal Feminism, Multicultural feminism, Marxist Feminism, Socialist Feminism,

UNIT V

Emerging concept of Feminism - Feminist Movements.

UNIT VI

Status of Women – in India - Women entrepreneur

BLOCK III: WOMEN IN UNORGANISED SECTOR AND THEIR PROBLEMS, WOMEN IN FAMILY AND MARRIAGE IN FAMILY AND MARRIAGE, PROBLEMS OF WORKING WOMEN AND DUAL ROLE BURDEN, NETWORK AND SUPPORT SYSTEM

UNIT VII

Women in unorganized sector and their problems

UNIT VIII

Women in Family and Marriage: Gender Role Divisions, Invisibility of Women's Role

UNIT IX

Problems of Working Women and Dual Role Burden. Role Conflict and Coping Mechanisms.

UNIT X

Network and Support System - Gender and Health: Reproductive – Health Problems

BLOCK IV: GENDER AND PARENTING ROLES, PROBLEMS OF WOMEN: PRODUCTION VS PRODUCTION

UNIT XI

Gender and Parenting Roles- Female headed Household- Single Parenthood.

UNIT XII

Problems of Women: Production vs. Reproduction, Household Work, Invisible Work, Domestic Violence.

BLOCK V: WOMEN'S WORK AND TECHNOLOGY, CONTRIBUTION OF WOMEN IN INDIA

UNIT XIII

Women's Work and Technology. Impact of Development Policies, Liberalization and Globalization on Women.

UNIT XIV

Contribution of Women in India .

References:

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- **Desai, N and Patel, V.** - *Indian Women*. Bombay: Popular Prakashan Publishing, 1985.
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RURAL AND URBAN SOCIOLOGY

THIRD SEMESTER

Course Code	Title of the Course
35134	Rural and Urban Sociology

Objectives

On completion of the course the students will be able to

- The objective is to trace the concepts of Rural Urban Sociology
- It is hoped that exposure to the course will lead to a better understanding of the various factors affecting rural urban society.

Outcomes of the course:

- The recent sociological research has given special importance to the various new thrust areas of interest of rural and urban areas.
- This course plan focuses on the emergence of understanding of rural and urban problems.

Contents:

BLOCK I: RURAL SOCIOLOGY-NATURE AND SCOPE OF RURAL SOCIOLOGY, IMPORTANCE OF THE STUDY OF RURAL SOCIOLOGY AND AGRARIAN SOCIAL STRUCTURE AND CHANGE

UNIT I

Rural Sociology-Nature and Scope of Rural Sociology; History of Rural Sociology

UNIT II

Importance of the study of Rural Sociology. Patterns of village settlements – Rural Urban contrast-Rurbanism- Peasant Studies-Agrarian Class Structure.

UNIT III

Agrarian Social Structure and Change -Village Social Structure; Land ownership pattern in Rural Society

BLOCK II: JAJMANI SYSTEM, FACTORS ACCOUNTING FOR THE CHANGES AND RURAL SOCIAL PROBLEMS

UNIT IV

Jajmani System; Tenancy Systems; Caste and social structure; Changing trends in inter caste relations,

UNIT V

Factors accounting for the changes, dominant caste, ancestral worship. Factors of Change; Agrarian Legislation; Land Reform programmes; Green Revolution; Rural Development Programmes

UNIT VI

Rural Social Problems-Agrarian Unrest and Peasant Movements- Untouchability; Rural Violence; Landlessness; Rural Indebtedness

BLOCK III: POVERTY; UNEMPLOYMENT, URBAN SOCIOLOGY, IMPORTANCE OF THE STUDY OF URBAN SOCIOLOGY, URBAN PLANNING

UNIT VII

Poverty; Unemployment- Seasonal unemployment -Illiteracy-Superstitions- Drinking water-housing- health and sanitation-Bonded and Migrant laborers.

UNIT VIII

Urban Sociology-Nature and Scope of Urban Sociology

UNIT IX

Importance of the Study of Urban Sociology; Urbanism as a way of life; Factors of Urbanization.

UNIT X

Urban Planning- Definition of urban locality, urban place- Urban agglomeration and other related terms.

BLOCK IV: URBAN RENEWAL, PLANNING FOR NEW SETTLEMENTS, TRENDS OF WORLD URBANIZATION

UNIT XI

Urban Renewal; Planning for New Settlements- Measuring Urbanization

UNIT XII

Trends of world Urbanization- Growth of urban population in India

BLOCK V: LOCATION OF CITIES - NATURE, CULTURE, FUNCTION, INDIA- URBAN SOCIAL PROBLEMS

UNIT XIII

Location of cities-nature, culture, function, migration.

UNIT XIV

India- Urban Social Problems-Crime; Juvenile Delinquency; Slums; Housing Problems; Environmental Problems; Poverty; Unemployment

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HUMAN RESOURCES MANAGEMENT

FOURTH SEMESTER

Course Code	Title of the Course
35141	HUMAN RESOURCE MANAGEMENT

Objectives

On completion of the course the students will be able to

- The course provides new theoretical insights that can advance our understanding of human resource development, including strengthening of the students for understanding of the impact the employment relationship has on contemporary society.
- It will also study the important perspectives, approaches, career plannings / Human Resource planning, Affirmative action plan, job requirements and there by quality of work and quality of life.
- This includes a study of how people behave in the employment setting - as managers, as workers, and as representatives. Through this combination students will be able to link issues such as inequality, class relations to employment, and will be more aware of the ways that conflict in the workplace is linked to conflict in the wider society.

Outcomes of the course:

- The combination provides enhanced opportunities for students considering career options in the public, private and voluntary sectors, giving students a broad understanding of work, employment, management and society more generally
- The knowledge of entrepreneur Development Programmes will also help students to set up their own ventures.

Contents:

BLOCK I: MANAGEMENT CONCEPT, ELEMENTS, MANAGEMENT THOUGHTS AND HUMAN RESOURCE MANAGEMENT

UNIT I

Management: Concept, elements, principles and functions of management;

UNIT II

Management thoughts: Henry Fayol, F.W.Taylor, and Peter Drucker.

UNIT III

Human resource management: Definition, scope, evolution, and functions.

BLOCK II: HUMAN RESOURCE POLICY AND FUNCTIONS, JOB ANALYSIS

UNIT IV

Human resource policy: Formulation and implementation; duties, responsibilities, and

qualities of human resource manager and challenges for the 21st century.

UNIT V

Human Resource functions: Human resource planning, recruitment, selection, induction and placement, promotion, transfer

UNIT VI

Job analysis, training, performance appraisal; discipline and disciplinary procedure, personnel records and personnel research; HR audit.

BLOCK III: WAGE AND SALARY ADMINISTRATION, THEORIES OF WAGES AND HUMAN RESOURCE PLANNING

UNIT VII

Wage and salary administration: job evaluation: definition, objectives; methods, advantages and limitation;

UNIT VIII

Theories of wages: concepts of wages, wage differentials – financial and non-financial incentives.

UNIT IX

Human Resource Planning: The demand for Human Resources - The Supply of Human Resources -

BLOCK IV: ESTIMATES OF INTERNAL SUPPLY AND ESTIMATES OF EXTERNAL SUPPLY, RECRUITMENT OF HUMAN RESOURCES AND PLANS

UNIT X

Estimates of Internal supply and Estimates of External supply Implementation of Human Resources Plans

UNIT XI

Recruitment of Human Resources - Constraints on Recruitment: Organizational policies.

UNIT XII

Human Resource Plans - Affirmation Action Plans - Recruiter habits - Environmental Conditions - Job Requirements

BLOCK V: INDUSTRIAL SOCIAL WORK: MEANING, SCOPE, LABOR PROBLEMS AND INDUSTRIAL COUNSELING IN INDUSTRIES AND WORKING WITH THE FAMILIES OF INDUSTRIAL WORKERS

UNIT XIII

Industrial social work: meaning, scope, and relevance; application of social work methods in the industrial sector;

UNIT XIV

Labor problems and industrial counseling in industries and working with the families of industrial workers: meaning, scope, relevance, advantages and disadvantages.

References

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ECOLOGY AND SOCIETY

FOURTH SEMESTER

Course Code	Title of the Course
35142	ECOLOGY AND SOCIETY

Objectives

On completion of the course the students will be able to

- The course also aims at providing knowledge of the debate on environment and development with a focus on environmental justice, policy and action.
- The study of inter connections between environment and society has gained in enormous significance in recent times on account of the debilitating effects on the environment and society
- To sensitize the students in order to re-orient sociology towards a more holistic perspective that would conceptualize social process within the context of the biosphere to determine the usefulness of ecological concepts and to acknowledge the role of social psychological process of the self in micro level decision making about the behaviour that affect the environment.

Outcomes of the course:

- The course plan aims to provide knowledge and scholarship of sociological basis of environment and society interface. It seeks to impart social skills in environmental concerns in order to understand the human suffering.
- As a prelude to it, the course focuses on „Environment in Sociological Theory“, both classical and contemporary. In view of this, it is understandable that the focus of environmental studies has moved from sociology of environment to environmental sociology.

Contents:

BLOCK I: ECOLOGY: CONCEPT, NATURE AND SCOPE, SOCIOLOGICAL UNDERSTANDING OF ECOLOGY, KARL MARX, EMILE DURKHEIM CONCEPT ON ENVIRONMENT

UNIT I

Ecology: Concept, Nature and Scope, Importance of studying Ecology.

UNIT II

Sociological Understanding of Ecology.

UNIT III

Karl Marx, Emile Durkheim concept on environment.

BLOCK II: INTRODUCTION OF ENVIRONMENTAL SOCIOLOGY: CONCEPT AND DEFINITIONS, THE RISE, DECLINE AND RESURGENCE OF ENVIRONMENTAL SOCIOLOGY, EMERGING THEORETICAL PARAMETERS IN ENVIRONMENTAL SOCIOLOGY, CONTRIBUTION OF ZAVESTOSKIS

UNIT IV

Introduction of Environmental Sociology: Concept and Definitions, Trends

UNIT V

The rise, decline and resurgence of environmental Sociology, 21st century paradigm.

UNIT VI

Emerging theoretical parameters in environmental Sociology

UNIT VII

Contribution of Zavestoskis, Dunlap, and Catton, Ramachandra Guha, Patrick Giddens and Radha Kamal Mukherjee.

BLOCK III: NATURE VERSUS NURTURE: SYNTHESIS OF SOCIETAL AND ENVIRONMENTAL DIALECT, ENVIRONMENTAL ISSUES PERTAINING TO POPULATION, CURRENT SITUATION ON HOUSING AND URBAN DEVELOPMENT

UNIT VIII

Nature versus Nurture: Synthesis of Societal and environmental dialect

UNIT IX

Environmental Issues pertaining to population, water, sanitation, pollution, energy

UNIT X

Current situation on Housing and Urban Development and impact of rural poverty

BLOCK IV: SOCIAL IMPACT ASSESSMENT OF ENVIRONMENTAL ISSUES, INTRODUCTION TO GLOBAL ENVIRONMENTALISM, TECHNOLOGY AND SOCIETY ENVIRONMENTAL JUSTICE

UNIT XI

Social impact assessment of environmental issues,- development, displacement, relocation and environmental problems.

UNIT XII

Introduction to Global Environmentalism and Its Importance

UNIT XIII

Study about the challenges to post materialism and the Environment today

UNIT XIV

Technology and society Environmental justice, policy and action.

References:

- **Arnold, David and Ramchandra Guha** - *Nature, Culture, Imperialism*. Delhi: Oxford University Press, South Commission, 1989.
- **Gadgil, Madhav and Ramchandra Guha** - *Ecology and Equity: The Use and Abuse of Nature in Contemporary India*, New Delhi: OUP. 1996.
- **Giddens, Antony** - *Global Problems and Ecological Crisis in Introduction to Sociology*. nd
- **Michael Redclift** - *Development and the Environmental Crisis*. New York: Meheun Co. Ltd., 1984.
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SOCIAL WELFARE ADMINISTRATION

FOURTH SEMESTER

Course Code	Title of the Course
35143	SOCIAL WELFARE ADMINISTRATION

Objectives:

- To acquire knowledge of the basic process of registering, managing, and administrating welfare agencies in the context of social work profession.
- To acquire skills to participate in management, administrative process, and programme delivery.
- To develop the ability to see the relationship between policy and programmes and to analyze the process as applied in specific settings and specific programmes.
- To gain knowledge on policy analysis and policy formulations and to study social policies, plans, legislations and programmes so as to be able to interpret, enforce, and challenge them.
- To understand critically the concept and content/indicators of social development

Outcome of the course

- This course aims at helping the learner to understand management process and developing administrative skills and also to understand the learners to how policy is a link between constitutional principles and legislative actions and to understand the concept of social development.

Contents:

BLOCK I: SOCIAL WELFARE ADMINISTRATION, PUBLIC RELATION, MONITORING AND EVALUATION AND SOCIAL WELFARE PROGRAMME AND AGENCIES

UNIT I

Social Welfare Administration: meaning and definition of social welfare administration and social work administration; purpose, historical development; principles, functions, and areas (policy making, planning, personnel, supervision, office administration, budgeting, finance, fund raising, accounting, auditing, purchase and stock keeping, record maintenance, co-ordination,

UNIT II

Public relation, monitoring and evaluation, and research, annual report); social welfare administration at national, state, and local levels; CSWB (Central Social Welfare Board), state social welfare board, directorate of social welfare, and handicapped welfare.

UNIT III

Social Welfare Programme and Agencies: evaluation of social welfare in India; voluntary social work, social agencies: meaning, definition, type and models of NGO's; roles of NGO's in national development; governmental schemes on social welfare;

BLOCK II: AGENCY REGISTRATION: METHODS, ADVANTAGES, REGISTRATION OF SOCIETIES AND TRUSTS, SOCIAL POLICY, OBCS, SCS, STS AND DE-NOTIFIED COMMUNITIES

UNIT IV

Agency registration: methods, advantages, preparation of byelaws, memorandum of association, rules, regulation, and registration procedures.

UNIT V

Registration of societies and trusts: governing board, committees. Executives; qualities, functions, and role.

UNIT VI

Social Policy: definition, need, evolution and constitutional base; sources and instrument of social policy,

UNIT VII

Social policies regarding Other Backward Castes (OBCs), Scheduled Castes (SCs), SCHEDULED TRIBES (STS), AND DE-NOTIFIED COMMUNITIES;

BLOCK III: SOCIAL POLICIES AND PROGRAMMES FOR WOMEN, CHILDREN, AGED, AND HANDICAPPED; SOCIAL LEGISLATION, CONSTITUTIONAL BASIS FOR SOCIAL LEGISLATION

UNIT VIII

Social policies and programmes for women, children, aged, andhandicapped; development and implementation of programmes for weaker sections.

UNIT IX

Social Legislation: Definition, its roles as an instrument of social change,

UNIT X

Constitutional basis for social legislation: Fundamental Rights and Directive Principles of state Policy

BLOCK IV: LAWS RELATED TO MARRIAGE AND LAWS RELATING TO DIVORCE, MINORITY, AND GUARDIANSHIP

UNIT XI

Laws Related to Marriage: Hindu, Muslim, Christian, and personal laws relating to marriage

UNIT XII

Laws relating to divorce, minority, and guardianship; adoption, succession, and inheritance

BLOCK V: LEGISLATION RELATING TO SOCIAL PROBLEMS, WOMEN AND DISABILITIES

UNIT XIII

Legislation relating to social problems such as prostitution, juvenile delinquency, women harassment

UNIT XIV

Legislation relating to child labour, untouchability, physical, and mental disabilities.

References:

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MEDICAL SOCIOLOGY
FOURTH SEMESTER

Course Code	Title of the Course
35144	MEDICAL SOCIOLOGY

Objectives

On completion of the course the students will be able to

- To introduce the student the concepts of health and to impress upon him that health is primarily a social science subject than of medical science.
- To make student understand that health is one of the basic rights of every citizen in the country.
- To understand the problems of health in India with respect to social epidemiology social cultural context of health behaviour and health care delivery system in the day to day lives of people in India and also to understand the relationship between political economy and health at the national and international levels with respect to WHO Report.

Outcomes of the course:

- In spite of 59 years of independence and several developmental efforts our health status as measured by quality of life is not up to global levels as facts produced by World Health Organization.
- People still suffer from preventable communicable, infectious diseases and even nutritional disorders are quite high. With globalization and liberalization the problems of health are likely to aggravate and should come into the picture to bring out into the open the social science dimension of health for rectifying the present anomalies in the health sector.

Contents:

BLOCK I: INTRODUCTION TO MEDICAL SOCIOLOGY, DIFFERENCE BETWEEN SOCIOLOGY OF MEDICINE AND SOCIOLOGY IN MEDICINE AND HISTORICAL DEVELOPMENT OF MEDICAL SOCIOLOGY

UNIT I

Introduction to Medical Sociology-Definition, Objectives, Principles, Scope and its relevance to patient care.

UNIT II

Difference between sociology of medicine and sociology in medicine

UNIT III

Historical development of medical sociology. Sociological Perspectives on Health and Illness-The Sick role-Illness

BLOCK II: CONCEPT OF HEALTH AND ILLNESS, FORMATION OF HEALTH BEHAVIOR, SOCIAL MEDICINE, THEORETICAL PERSPECTIVES OF HEALTH

UNIT IV

Concept of Health and Illness: Aspects of Health - Physical, Social, Emotional, and Spiritual.

UNIT V

Formation of Health Behavior: Beliefs, Values, Attitudes and Practices. Social Groups and Access to Healthcare.

UNIT VI

Social Medicine, Community Health, Health Care and Agencies.

UNIT VII

Theoretical perspectives of Health-Functional Approach, Conflict Approach, Integrationist Approach, Labeling Approach

BLOCK III :Social Epidemiology:Meaning and Definition,Natural History of diseases,Hospital and health Profession in society.

UNIT VIII

Social Epidemiology-Meaning and Definition of social Epidemiology. Vital Statistics: Uses and sources of vital and health statistics, Components of Epidemiology

UNIT IX

Natural history of diseases, Social Etiology - Social Epidemiology and Ecology of Disease - Microbial Theory - Process of Transmission. Socio-Cultural factors bearing on health in India.

UNIT X

Hospital and Health Profession in Society-Hospital as a Social Institution. Structure and function of a hospital. Cost of hospitalization. Medical social service in a hospital.

BLOCKIV:Professionalization of health Personnel and Management Health care Services.

UNIT XI

Professionalization of Health personnel. The process of seeking Medical Care and the sick role – Illness as a Deviance – The functionalist approach- The Sick Role – Labelling Theory – Illness as a Social Deviance - Health Stratification- caste and class based inequalities.

UNIT XII

Management of Health care Services-Public and Private Health Care Services in India: Evolution of public health systems in India- Health Planning in India (Committees, Planning commission

BLOCKV:Five year Plans and Contemporary Issues in Health Services Management.

UNIT XIII

Five year plans - National Health Policies)-Public health systems in India (Center, State, District & Village level) - Current trends in private health care in India.

UNIT XIV

Contemporary Issues in Health Services Management: Medical technology - Health care work force - Learning management - Intersectoral collaboration - Risk Management.

Reference

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M.A (PM & IR)

Subj. Code	Title	CIA Max.	ESE Max.	TOT Max.	C
I Semester					
30811	Principles of Management	25	75	100	4
30812	Organizational behaviour	25	75	100	4
30813	Human Resource Management	25	75	100	4
30814	Labour Legislations-I	25	75	100	4
	Total	100	300	400	16
II Semester					
30821	Public Personnel Administration	25	75	100	4
30822	Labour Legislations-II	25	75	100	4
30823	Training and Development	25	75	100	4
30824	Business Environment	25	75	100	4
	Total	100	300	400	16
III Semester					
30831	Business Law	25	75	100	4
30832	Management Information System	25	75	100	4
30833	Industrial Relation Management	25	75	100	4
30834	Principles of Economics	25	75	100	4
	Total	100	300	400	16
IV Semester					
30841	Compensation Management	25	75	100	4
30842	Global Human Resource Management	25	75	100	4
30843	Emotional Competence	25	75	100	4
30844	Organizational Development	25	75	100	4
	Total	100	300	400	16
GRAND TOTAL		400	1200	1600	64

30811 - PRINCIPLES OF MANAGEMENT

BLOCK I: BASIC CONCEPTS OF MANAGEMENT

- UNIT 1 Management: Definition – Nature, Scope and Functions – Evolution of Management – Management thought in modern trend – Patterns of the management analysis – Management Vs. Administration - Management and Society: The external Environment, Social Responsibility and Ethics.
- UNIT 2 Management Science and Theories : Contributions of FW Taylor, Henri Fayol, Elton Mayo, Roethlisberger, H.A.Simon and P.F Drucker - Universality of Management - Relevance of management to different types of organization.
- UNIT 3 Planning: Nature and Purpose – Principles and planning premises – Components of planning as Vision, Mission, Objectives, Managing By Objective (MBO) Strategies, Types and Policies -Planning and Decision Making: Planning process.
- UNIT 4 Decision making: Meanings and Types – Decision-making Process under Conditions of Certainty and Uncertainty – Rational Decision Making Strategies, Procedures, Methods, Rules, Projects and Budgets.

BLOCK II: RECRUITMENT AND SELECTION

- UNIT 5 Organizing: Nature, Importance, Principles, purpose and Scope - Organizing functions of management – Classifications of organization – Principles and theories of organization – Effective Organizing – Organizational Culture and Global Organizing.
- UNIT 6 Organizational Structure – Departmentalization – Span of control – Line and staff functions – Formal and Informal Groups in Organizations - Authority and responsibility - Centralization and decentralization – Delegation of authority – Committees – Informal organization.
- UNIT 7 Staffing: General Principles of Staffing- Importance, techniques, Staff authority and Empowerment in the organization – Selection and Recruitment - Orientation - Career Development - Career stages – Training – Performance Appraisal.
- UNIT 8 Creativity and Innovation – Motivation - Meaning – Importance – Human factors of Motivation – Motivation Theories: Maslow, Herzberg, Mc Gregor (X&Y), Ouchi (Z) ,Vroom, Porter-Lawler, McClelland and Adam – Physiological and psychological aspects of motivation .

BLOCK III: FUNCTIONS OF MANAGEMENT

- UNIT 9 Directing : Meaning, Purpose, and Scope in the organization – Leadership: Meaning, Leadership styles, Leadership theories: Trait, Contingency, Situation, Path-Goal, Tactical,

Transactional, Transformational and Grid. Leaders: Type, Nature, Significance and Functions, Barriers, Politics and Ethics. Leader Vs. Manager.

UNIT 10 Communications: Meaning – Types – Process – Communication in the decision making – Global Leading - Effective communication in the levels of management. – Uses of Communication to Planning, Organizing, coordinating and controlling.

UNIT 11 Co-ordination: Concept; Meaning, Characteristics, Importance in the organization, Co-ordination process and principles - Techniques of Effective co-ordination in the organization - Understanding and managing the group process.

BLOCK IV: BUSINESS ETHICS WITH NEW PERSPECTIVES IN MANAGEMENT

UNIT 12 Business ethics: Relevance of values in Management; Holistic approach for managers indecision-making; Ethical Management: Role of organizational culture in ethics – Ethics Committee in the organization.

UNIT 13 Controlling: Objectives and Process of control Devices of control – Integrated control – Special control techniques- Contemporary - Perspectives in Device of Controls

UNIT 14 New Perspectives in Management - Strategic alliances – Core competence – Business process reengineering – Total quality management – Six Sigma- Benchmarking- Balanced Score-card.

REFERENCES

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3. **Wehrich and Koontz**, Management: A Global Perspective, McGraw Hill, 1988
4. Peter F. Drucker, Management, 2008.
5. Gene Burton and Manab Thakur, Management Today: Principles and Practice, Tata McGraw Hill.
6. Ricky W. Griffin, Management, South-Western College Publications, 2010
7. Stephen P. Robbins and Mary Coulter, Management, 9th Edition, 2006.
8. Kaplan and Norton, The Strategy-Focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment, HBP, 2000.

30812 - ORGANISATIONAL BEHAVIOUR

Objectives:

- To understand the personality traits and influence on the organization.
- To imbibe the necessary conceptual understanding of behaviour related people
- To learn the modern trends, theories and changes in organizational Behaviour.

BLOCK I: BASICS OF ORGANISATIONAL BEHAVIOUR

- UNIT 1 Organizational Behaviour: History – Meaning Elements – Evolution, Challenges and opportunities – Trends – disciplines – Approaches – Models – Management functions relevance to organizational Behaviour – Global Emergence of OB as a discipline.
- UNIT 2 Personality – Determinants, Structure, Behaviour, Assessment, Individual Behaviour: Personality & Attitudes- Development of personality – Nature and dimensions of attitude – Trait Theory – Organizational fit – Organizational Commitment
- UNIT 3 Emotions – Emotional Intelligence – Implications of Emotional Intelligence on Managers – EI as Managerial tool – EI performance in the organization – Attitudes: Definitions – Meaning – Attitude relationship with behaviour – Types – Consistency
- UNIT 4 Individual Behaviour and process of the organization: Learning, Emotions, Attitudes, Perception, Motivation, Ability, Job satisfaction, Personality, Stress and its Management – Problem solving and Decision making – Interpersonal Communication - Relevance to organizational behaviour.

BLOCK II: ORGANISATIONAL SOURCES AND MANAGEMENT

- UNIT 5 Group Behaviour: Group Dynamics - Theories of Group Formation - Formal and Informal Groups in organization and their interaction - Group norms – Group cohesiveness – Team: Importance and Objectives - Formation of teams – Team Work-Group dynamics – Issues - Their relevance to organizational behaviour.
- UNIT 6 Organizational Power: Organizational Power: Definition, Nature, Characteristics - Types of powers - Sources of Power - Effective use of power – Limitations of Power – Power centre in Organization.
- UNIT 7 Organizational Politics: Definition – Political behaviour in organization - Factors creating political behaviour – Personality and Political Behaviour - Techniques of managing politics in organization – Impact of organizational politics.
- UNIT 8 Organizational Conflict Management: Stress Management: Meaning – Types – Sources and strategies resolve conflict – Consequences – Organizational conflict: Constructive and Destructive conflicts - Conflict Process - Strategies for encouraging constructive conflict - Strategies for resolving destructive conflict.

BLOCK III: ORGANISATIONAL CLIMATE AND CULTURE

UNIT 9 Organizational Dynamics: Organizational Dynamics – Organizational Efficiency, Effectiveness and Excellence: Meaning and Approaches – Factors affecting the organizational Climate.

UNIT 10 Organizational Culture: Meaning, significance – Theories – Organizational Climate – Creation, Maintenance and Change of Organizational Culture – Impact of organizational culture on strategies – Issues in Organizational Culture.

UNIT 11 Inter personal Communication: Essentials, Networks, Communication technologies – Non-Verbal communications Barriers – Strategies to overcome the barriers. Behavioral Communication in organization - Uses to Business

BLOCK IV: CHALLENGES AND ORGANISATIONAL DEVELOPMENT

UNIT 12 Organizational Change: Meaning, Nature and Causes of organizational change Organizational Change –Importance – Stability Vs Change – Proactive Vs. Reaction change – the change process – Resistance to change – Managing change.

UNIT 13 Organizational Behaviour responses to Global and Cultural diversity, challenges at international level, Homogeneity and heterogeneity of National cultures, Differences between countries.

UNIT 14 Organizational Development: Meaning, Nature and scope – Features of OD – OD Interventions- Role of OD – Problems and Process of OD – process OD and Process of Intervention - Challenges to OD- Learning Organizations - Organizational effectiveness Developing Gender sensitive workplace

REFERENCES

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2. Stephen P. Robbins, Organizational Behaviour, Prentice Hall; 2010
3. Keith Davis, Organizational Behavior: Human Behavior at Work, McGraw Hill, 2010
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7. Judith R. Gordon, A Diagnostic Approach to Organizational Behaviour, Allyn & Bacon, 1993.

30813 - HUMAN RESOURCE MANAGEMENT

Objective:

- To understand the concepts and methods and techniques of Human Resource Management
- To know the Human resource management theories and real time practices
- To identify the contemporary issues in human resource management

BLOCK I: BASICS OF HUMAN RESOURCE MANAGEMENT

- UNIT 1: Introduction to Human Resource Management: Concept, Definition, Objectives, Nature and Scope of HRM - Functions of HRM – Evolution of human resource management - Role and structure of Human Resource Function in organizations- Challenges in Human Resource Management
- UNIT 2 Human Resource Management Approaches: Phases of human resource Management- The importance of the human factor – Competitive challenges of HRM – HRM Models – Roles and responsibilities of HR department.
- UNIT 3 Human Resource Planning: Personnel Policy - Characteristics - Role of human resource manager – Human resource policies – Need, Scope and Process – Job analysis – Job description – Job specification- Succession Planning.
- UNIT 4 Recruitment and Selection Process: Employment planning and forecasting Sources of recruitment- internal Vs. External; Domestic Vs. Global sources- Selection process Building employee commitment : Promotion from within - Sources, Developing and Using application forms – IT and recruiting on the internet.

BLOCK II: RECRUITMENT & SELECTION

- UNIT 5 Employee Testing & selection : Selection process, basic testing concepts, types of test, work samples & simulation, selection techniques, interview, common interviewing mistakes, Designing & conducting the effective interview, small business applications, computer aided interview.
- UNIT 6 Training and Development: Orientation & Training: Orienting the employees, the training process, need analysis, Training techniques, special purpose training, Training via the internet. - Need Assessment - Training methods for Operatives and Supervisors
- UNIT 7 Executive Development: Need and Programs - Computer applications in human resource management – Human resource accounting and audit. On-the - job and off-the-job Development techniques using HR to build a responsive organization
- UNIT 8 Employee Compensation : Wages and Salary Administration – Bonus – Incentives – Fringe Benefits –Flexi systems - and Employee Benefits, Health and Social Security Measures,

BLOCK III: EMPLOYEES APPRAISALS

- UNIT 9 Employee Retention: Need and Problems of Employees – various retention methods– Implication of job change. The control process – Importance – Methods – Employment retention strategies for production and services industry
- UNIT 10 Appraising and Improving Performance: Performance Appraisal Programs, Processes and Methods, Job Evaluation, Managing Compensation, Incentives Performance appraisal:

Methods - Problem and solutions - MBO approach - The appraisal interviews - Performance appraisal in practice.

UNIT 11 Managing careers: Career planning and development - Managing promotions and transfers - Sweat Equity- Job evaluation systems – Promotion – Demotions – Transfers- Labour Attrition: Causes and Consequences

BLOCK IV: APPRAISAL AND TRAIL UNION

UNIT 12 Employee Welfare, Separation: Welfare and safety – Accident prevention – Employee Grievances and their Redressal – Industrial Relations - Statutory benefits - non-statutory (voluntary) benefits – Insurance benefits - retirement benefits and other welfare measures to build employee commitment

UNIT 13 Industrial relations and collective bargaining: Trade unions – Collective bargaining - future of trade unionism - Discipline administration - grievances handling - managing dismissals and workers Participation in Management- Separation: Need and Methods.

UNIT 14 Human Resource Information System- Personnel Records/ Reports- e-Record on Employees – Personnel research and personnel audit – Objectives – Scope and importance.

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1. Mathis and Jackson, Human Resource Management, South-Western College, 2004.
2. Nkomo, Fottler and McAfee, Human Resource Management, South-Western College, 2007.
3. R. Wayne Mondy, Human Resource Management, Prentice Hall, 2011.
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7. Edwin B. Flippo, Personnel Management, McGraw-Hill, 1984
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9. R.S. Dwivedi, Manpower Management
10. Lynton & Pareek, Training and Development, Vistaar Publications, 1990.

30814 - LABOUR LEGISLATIONS – I

Objective:

- To know the basic concept of labour legislations .
- To gain knowledge about the labour act

BLOCK I: BASICS OF LABOUR LEGISLATIONS - I

UNIT 1 Factories Act, 1948: Provision's relating to health, safety, welfare, working hours, leave etc., of workers approval

UNIT 2 Licensing and registration of factories, manager and occupier – Their obligations under the Act, powers of the authorities under the Act, Penalty provisions.

UNIT 3 Workmen's Compensation Act, 1923: Employer's liability for compensation, amount of compensation method of calculating wages – Review

UNIT 4 distribution of compensation – Remedies of employer against stranger – Returns as to compensation – Commission for workmen's compensation.

BLOCK II: INDUSTRIAL DISPUTE AND UNFAIR PRACTICES ACT

UNIT 5 Industrial Dispute Act, 1947: Industrial dispute – Authorities for settlement of industrial disputes – Reference of industrial disputes

UNIT 6 Procedures – Power and duties of authorities, settlement and strikes – Lock-out – Lay-off – Retrenchment – Transfer and closure

UNIT 7 Unfair labour practices – Miscellaneous provision offences by companies, conditions of service to remain unchanged under certain circumstances, etc.

UNIT 8 Shops and Establishments Act, 1947: Definitions – Salient provisions – Powers of the authorities.

BLOCK III: EMPLOYEES WELFARE INSURANCE ACT

UNIT 9 Employee's State Insurance Act, 1948: Registration of Factories and Establishments, the employee's State Insurance Corporation, Standing Committee and Medical Benefit Council, provisions relating to contributions

UNIT 10 Inspectors – Their functions and disputes and claims – Offences and penalties – Miscellaneous provisions.

UNIT 11 Employees Provident Fund and Miscellaneous Provisions Act, 1952: Employees provident fund and other schemes

BLOCK IV: EXEMPTION RELATING TO THE ACT

- UNIT 12 Determination and recovery of money due from employer, appointment of inspectors and their duties
- UNIT 13 Provisions relating to transfer of accounts and liability in case of transfer of establishment exemption under the Act –
- UNIT 14 Contract Labour Regulations and Abolition Act, 1970 ,Court's power under the act - employer and employee relationship – Problems – pertaining to the employee – solvation at door steps.

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2. Kapoor N D, Industrial Law
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4. D. R. N. Sinha, Indu Balasinha & Semma Priyadarshini Shekar, Industrial Relation, Trade unions and Labour Legislation, 2004.

30821 - PUBLIC PERSONNEL ADMINISTRATION

Objectives:

- To know the primary objectives and concepts of personal management
- To understand the problems and prospects of personal management.

BLOCK I: BASICS OF PUBLIC PERSONNEL ADMINISTRATION

UNIT 1 Public Personnel Administration - Meaning, Nature and scope - Characteristics of Public Personnel Administration in India, Functions and Significance of Personnel Administration

UNIT 2 Public Services and their Role in Administrative System: Concept - Nature and Scope of Personnel Administration.

UNIT 3 Classification of Services (Cadres) - Generalists and Specialists -Development of Public Services in India - Bases of Bureaucracy.

UNIT 4 Civil Service in the Context of Modern Bureaucracy: Concepts – Nature – Importance – Implications.

BLOCK II: RECRUITMENT AND TRAINING

UNIT 5 Career Planning and Development, Administrative Tribunals, Central and State Training Institutes Personnel/UPSC/SPSC/SSC

UNIT 6 Civil Service –Concepts – Nature –Importance – Implication – Need–Types- Scope.

UNIT 7 Recruitment: Meaning - Concepts – Nature – Importance – Need–Types- Scope.

UNIT 8 Training- Performance Appraisal – Promotion - Recruitment (Reservation in Services), Personnel Policy.

BLOCK III: PROMOTION AND TRAINING

UNIT 9 Features Maladies. Concepts – Nature – Importance – Implication – Need–Types- Scope.

UNIT 10 Problems of recruitment: Concepts – Nature – Importance – Implication – Need–Types- Scope.

UNIT 11 Promotion –Training -Concepts – Nature – Importance Meaning- Implication – Need–Types- Scope, Features Management of change

BLOCK IV: GRIEVANCES REDRESSAL MORALE

- UNIT 12 Redressal of Public Grievances Concepts – Nature – Importance Meaning – Implication – Need–Types- Scope, Features Management of change
- UNIT 13 Rights of the Civil Servants: Concepts – Conduct – Discipline Concepts – Nature – Importance – Implication – Need–Types- Scope, Features Management of change
- UNIT 14 Morale – Retirement and retirement benefits. Concepts – Nature – Importance Implication – Need–Types- Scope.

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30822 - LABOUR LEGISLATIONS – II

Objective:

- To know the basic concept of LL and provisions.
- To gain knowledge on payment of gratuity act on 1972

BLOCK I: BASICS OF LABOUR LEGISLATIONS - II

- UNIT 1 Payment of Bonus Act: Computation of available surplus calculation of direct tax payable surplus calculation of direct tax payable by the employer
- UNIT 2 Eligibility for bonus and payment of bonus – deduction from bonus payable – adjustment of customary of interim bonus payable
- UNIT 3 Adjustment of customary or interim bonus linked with production or productivity – set on and set off allocable surplus
- UNIT 4 Set on and set off allocable surplus set on and set off allocable surplus presumption about accuracy of balance sheet and profit and loss account.

BLOCK II: PAYMENT OF GRATUITY AND WAGES ACT

- UNIT 5 Payment of Gratuity Act, 1972: Payment of Gratuity – exemption – nomination – determination and recovery of the amount of gratuity.
- UNIT 6 Payment of Wages Act, 1936: Objects, provisions relating to responsibility for payment of wages
- UNIT 7 Fixation of wage periods, time of payment, deduction and fines
- UNIT 8 Maintenance of records and registers, inspectors appointment of authorities and adjudication of claims.

BLOCK III: MINIMUM WAGE ACT AND FEATURES

- UNIT 9 Minimum Wages Act, 1948: Objects, fixing of minimum rate or wages – procedure for fixing and receiving minimum wages
- UNIT 10 Appointment of advisory board – payment of minimum wages, maintenance of registers and records contracting out
- UNIT 11 An Act to provide for fixing minimum rates of wages in certain employments. Powers of appropriate government offences and penalties.

BLOCK IV: STANDING ORDERS AND LEVEL OUTS

- UNIT 12 Industrial Employment(Standing Orders) Act, 1946: Provisions regarding certification and operating of standing orders .
- UNIT 13 Duration and modification of standing orders – power of certifying officer – interpretation of standing orders.

UNIT 14 Trade Union Act, 1926: Registration of Trade Unions, rights, and liabilities trade unions
– procedure – penalties

REFERENCE

- 1 Bare Acts
- 2 Kapoor N D, Industrial Laws
- 3 Shukla M C, Industrial Laws
- 4 Tax Mann, Labour Laws, 2008.

30823 - TRAINING AND DEVELOPMENT

Objective:

- To know the basic concept of training and development
- To understand the various training method

BLOCK I: BASICS OF TRAINING AND DEVELOPMENT

- UNIT 1 Training: Meaning – Definition – Need – Objectives – Difference among education, training and development - Training, Development and Performance consulting – Design of HRD systems – Development of HRD strategies
- UNIT 2 Levels of Training: Individual, operational and organizational levels – horizontal , vertical , top , bottom& official training.
- UNIT 3 Training Organisation: Need assessment of Training- Organisational structure of training organizations
- UNIT 4 Training in manufacturing and service organizations – GST – Tax slap for state and central - Professional tax. Organisational analysis, task analysis and individual analysis – consolidation..

BLOCK II: ROLES OF MANAGERS

- UNIT 5 Duties and responsibilities of training managers – Challenges – Selection of trainers: Internal and external.
- UNIT 6 Employees Training: Meaning – Need – importance = implications – features – functions- organizational climate for training and development
- UNIT 7 Areas of training: Knowledge, skill, attitude – Methods of training: On the job – Off the job.
- UNIT 8 *Executive Development Programmes: Meaning – Need –importance – nature – scope – implications*

BLOCK III: APPRAISALS AND AWARDS

- UNIT 9 Methods of evaluation of effectiveness of training - development programmes - Key performance parameter
- UNIT 10 *Evaluation of Training: Evaluation of training - meaning – nature – significance - types – implications*
- UNIT 11 Concept of return on Investment and cost benefit analysis –ROI – IRR – CPA- CBA
Linking training needs and objectives of various theories of learning and methods of training

BLOCK IV: CURRENT SCENARIO OF TRAINING AND DEVELOPMENT

- UNIT 12 Current practices in assessing training and development – latest scenario of assessing training. Learning cycles – factors for fixing duration – selection of participants – choice of trainers
- UNIT 13 Training and Development in India: Government policy on training – budget estimate – allocation - CSR - Conducting the programs – ice breaking and games – relevance of culture of participants
- UNIT 14 Training Institutes in India – Management Associations – Development programmes in Public and Private Sector organization- – Cost benefit analysis – Role of trainer and line manager in evaluations – Design of Evaluation – Kirkpatrick's model

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6. Human Resources Development – Theory and Practice, Tapomoy Deb Ane Books India, 2008.
7. Human performance consulting, James. S. Pepitone, Guey publishing Company, Houston,2006.

30824 - BUSINESS ENVIRONMENT

Objectives:

- To understand the concepts and constituents of Business environment
- To know the environmental issues in the business context
- To analyze the changes in the global environmental relating to business

BLOCK I: BASICS OF BUSINESS ENVIRONMENT

UNIT 1 Business Environment: Introduction: Concepts – Significance - Dynamic factors of environment – Importance of scanning the environment – Macro and Micro Environment – Micro and Macro Economics to the business – Constituents of Business environment

UNIT 2 Fundamental issues captured in PESTLE– Political, Economic, Socio-cultural, Technological, Legal and Ecological environment- Opportunities and Threats as environmental issues to address by Businesses.

UNIT 3 Political Environment: Government and Business – Political Systems, Political Stability and Political Maturity as conditions of business growth - Role of Government in Business: Entrepreneurial, Catalytic, Competitive, Supportive, Regulative and Control functions

UNIT 4 Government and Economic planning: Industrial policies and promotion schemes – Government policy and SSI – Interface between Government and public sector - Guidelines to the Industries – Industrial Development strategies; salient features, Role of public and private sectors, Comparative cost dynamics.

BLOCK II: ECONOMIC AND INTERNAL ENVIRONMENT

UNIT 5 Economic Environment: Phase of Economic Development and its impact- GDP Trend and distribution and Business Opportunities – capacity utilisation – Regional disparities and evaluation - Global Trade and investment environment.

UNIT 6 Financial System and Business capital: Monetary and Fiscal policies - Financial Market structure – Money and Capital markets – Stock Exchanges and Its regulations – Industrial Finance - Types, Risk - Cost-Role of Banks; Industrial Financial Institutions - Role of Management Institutions

UNIT 7 Role of Central Bank- Fiscal System: Government Budget and Taxation Measures- Fiscal Deficits and Inflation- FDI and collaboration –Foreign Capital tapping by businesses- Export-Import policy – Foreign Exchange and Business Development.

UNIT 8 Labour Environment: Labour Legislation – Labour and social securities – Industrial Relations – Trade Unions – Workers participation in management – Exit Policy – Quality Circles.

BLOCK III: SOCIAL AND TECHNOLOGICAL ENVIRONMENT

- UNIT 9 Social and Technological Environment: Societal Structure and Features- Entrepreneurial Society and its implications for business – Social and cultural factors and their implications for business- Technology Development Phase in the Economy as conditioner of Business Opportunities
- UNIT 10 Technology Environment: Technology Policy- Technology Trade and transfer- Technology Trends in India- Role of Information Technology – Clean Technology. – Time lag in technology – Appropriate technology and Technology adoption- Impact of technology on globalization.
- UNIT 11 Legal and Ecological Environment: Legal Environment as the all-enveloping factor from inception, location, incorporation, conduct, expansion and closure of businesses – IDRA and Industrial licensing – Public, Private, Joint and Cooperative Sectors.

BLOCK IV: NEW ECONOMIC POLICY AND LEGAL ENVIRONMENT

- UNIT 12 Legal Aspects of Entering Primary and Secondary Capital Markets- Law on Patents- Law on Consumer Protection- Law on Environmental Protection- Need for Clean energy and Reduction of Carbon footprint.
- UNIT 13 New Economic Policy Environment in India: Liberalization, Privatization and Globalization (LPG): Efficiency Drive through Competition- Facets of Liberalization and impact on business growth
- UNIT 14 Aspects of Privatization and impact on business development– Globalization and Enhanced Opportunities and Threats – Extended competition in Input and Output Markets Role of WTO, IMF and World Bank in global economic development.

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3. Mohinder Kumar Sharma, Business Environment in India, South Asia Books.
4. Adhikary M, Economic Environment of Business, Sultan Chand & Sons.
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6. Francis Cherunilam, Business Environment and Development, Himalaya Publishing House, 2008.
7. Maheswari & Gupta, Government, Business and Society.

30831 - BUSINESS LAW

Objectives:

- To understand the legal structure and provision for running a business
- To learn various acts, enactments and amendments of mercantile law
- To know the various aspects of Business law for legal process.

BLOCK I: BASICS OF BUSINESS LAW

- UNIT 1 Indian Contract Act 1872: Contract – Meaning – Essential elements – Nature and formation of contract: Nature, elements, Classifications of Contracts on the basis of Validity, Formation and Performance– offer and acceptance
- UNIT 2 Offer and Acceptance: Introduction – Proposal – acceptance – Communications of offer, Acceptance and Revocations – Offer and acceptance by Post.
- UNIT 3 Consideration: Definitions, Types of consideration – essentials of Consideration – Privity of Contracts: Exceptions – Capacity: Consent – Legality of object – Quasi contract Discharge of contract - Remedies for breach of contract – Quasi contracts.
- UNIT 4 Special Contracts: Contract of Indemnity and Guarantee – Bailment and Pledge – Law of Agency-Definition – Rights of Surety -Discharge of Surety – Bailment and Pledge: Introduction, Classifications, Duties and Rights of Bailer and Bailee – termination of Bailment -

BLOCK II: PARTNERSHIP AND COMPANY ACT

- UNIT 5 Formation of contract under Sale of Goods Act, 1930: Contract of sale - Conditions and Warranties - Transfer of property - Performance of the contract: Essentials of valid tender performance, Performance reciprocal promise- Rights of an unpaid seller.
- UNIT 6 Laws on Carriage of Goods: Duties, Rights and Liabilities of Common Carriers under: (i) The Carriers Act, 1865. (ii) The Railways Act, 1989, (iii) The Carriage of Goods by Sea Act, 1925, (iv) The Carriage by Air Act, 1972 and (v) The Carriage By Road Act, 2007
- UNIT 7 Negotiable Instruments Act, 1881: Negotiable Instruments: Features – Types- Parties – Material alteration – Parties to negotiable instruments – Presentations of negotiable instrument.
- UNIT 8 Insurance: Definition and sources of Law – Judicial set up in India — Insurance as a contract -History of Insurance Legislation in India - Legal principles - Fundamental Principles of Life Insurance Fire Insurance and Marine Insurance.

BLOCK III: IPR AND IT

- UNIT 9 Indian Partnership Act, 1932: Meaning and test of partnership – registration of firms Life Insurance Corporation Act 1956 – General Insurance Business Nationalization Act 1973.

UNIT 10 Partners Relations: Introduction – Eligibility to be a partner – Registration of change in partner – Limited Liabilities of partnership - Dissolution of firms - Characteristics – Kinds – Incorporation of Companies – Memorandum of Association – Articles of Association

UNIT 11 Companies Act 1956: Nature and kinds of companies – Prospectus – Disclosure Needs - Management and Administration – Director – Appointment, Powers and Duties

BLOCK IV: MSME

UNIT 12 Formation of a Company : Introduction – process - Minutes and Resolutions – E-Filing of documents under Ministry of Corporate Affairs (MCA) 21- Management of companies –Meetings- Types- Requirements -AGM and EGM – Board Meeting

UNIT 13 Law of Information Technology: Introduction – Rationale behind IT act 2000 – Information technology Act 2000: Scheme of the IT Act 2000: Digital signature: attribution; Acknowledgement and dispatch of Electronics Record – Regulation certifying authorities.

UNIT 14 Protection of minority interest: Introduction - Methods of Winding-up - The Right to Information Act, 2005 Right to know, Salient features of the Act, obligation of public Authority, Designation of Public Information officer, Request for obtaining information,

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1. M.S.Pandit and ShobhaPandit, Business Law, Himalaya Publishing House, Mumbai, 2010.
2. Pathak, Legal Aspects of Business, TMH, 2009.
3. N.D. Kapoor, Mercantile Law, Sultan Chand & Sons, New Delhi.
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30832 - MANAGEMENT INFORMATION SYSTEM

Objectives:

- To learn the principles of Management Information System for organizations
- To understand the uses , function of application MIS in organization
- To analyze the scope of MIS for business organizations

BLOCK I: BASICS OF MANAGEMENT INFORMATION SYSTEM

- UNIT 1 Introduction of Information System: Information system: Meaning, Role – System concepts – Organization as a system – Components of Information system – Various activities of IS and Types of IS
- UNIT 2 Information System: Concepts of Information System and Management information systems design and development-Implementation testing and conversion- Evolution and element of MIS
- UNIT 3 MIS : Definition – Characteristics and basic requirements of MIS – Structure of MIS- Approaches to MIS development- Computerized MIS- Pre-requisites of an effective MIS- Limitations of MIS.
- UNIT 4 MIS and Decision support System (DSS): MIS Vs. data processing – MIS and decision support system – MIS and information resource management – DSS and AI – Overview of AI - DSS models and software.

BLOCK II: COMMUNICATION USAGE OF MIS

- UNIT 5 MIS and Operations Research- Executive information and Decision support systems – Artificial intelligence and expert system – Merits and De Merits – Pitfalls in MIS.
- UNIT 6 MIS in Indian organizations – Recent developments in information technology - Installation of Management Information & Control System in Indian organization
- UNIT 7 Computers and Communication: Information technology and Global integration –On-line information services – Electronic bulletin board systems – The internet, electronic mail, interactive video
- UNIT 8 Communication Channels: Advantages disadvantages – Communication networks – Local area networks – Wide area networks – Video conferencing- Relevance to MIS- Usage in Business process.

BLOCK III: MIS FUNCTIONS AND FEATURES

- UNIT 9 Functional Information systems: MIS for Research Production - MIS for Marketing - MIS for Personnel - MIS for Finance - MIS for Inventory- MIS for Logistics- MIS for Product Development- MIS for Market Development.

UNIT 10 Client/ Server Computing: Communication servers – Digital networks – Electronic data interchange and its applications - Enterprise resource planning systems (ERP Systems) – Inter-organizational information systems – Value added networks – Networking.

UNIT 11 Electronic Commerce and Internet: E-Commerce bases – E-Commerce and Internet – M-Commerce- Electronic Data Inter-change (EDI) - Applications of internet and website management - Types of Social Media - uses of social media in business organization

BLOCK IV: COMPUTER SYSTEMS AND ETHICAL CHALLENGES OF MIS

UNIT 12 Computer System and Resources: Computers systems: Types and Types of computer system processing - Secondary storage media and devices – Input and output devices – Hardware standards – Other acquisition issues.

UNIT 13 Managing Information Technology: Managing Information Resources and technologies – IS architecture and management - Centralized, Decentralized and Distributed - EDI, Supply chain management & Global Information technology Management.

UNIT 14 Security and Ethical Challenges: IS controls - facility control and procedural control - Risks to online operations - Denial of service, spoofing - Ethics for IS professional - Societal challenges of Information technology

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30833 - INDUSTRIAL RELATION MANAGEMENT

Objective:

- To gain knowledge about the trade unions
- To know the basic concept of industrial relations management

BLOCK I: BASICS OF INDUSTRIAL RELATIONS MANAGEMENT

- UNIT 1 Constitution of India – Salient features – Fundamental rights and directive principles of State policy – Labour movement
- UNIT 2 Concept of labour movement and Union Organization – Trade union movement and various phases of the movement – Trade unions and economic development.
- UNIT 3 Development of Trade Unionism in India – Historical retrospect – Central organization of workers in India – Role of internal trade union
- UNIT 4 Inter and intra union rivalries – Union recognition – International Labour Movement: ICFTU – WFTU – ILO – History

BLOCK II: IR MACHINERY AND LABOUR

- UNIT 5 objective and functions – Convention and recommendations – PCR rights and duties – functions - problems-Voluntary Welfare Measures – Statutory Welfare Measures – Labour – Welfare Funds – Education and Training Schemes
- UNIT 6 Concept of Industrial Relations – Social obligations of industry – Role of government employers and the unions in industrial relations
- UNIT 7 Industrial relations machinery – Joint consultation – Works committee – Negotiation: Types of Negotiations – Conciliations
- UNIT 8 Adjudication, voluntary arbitration – Workers participation in industry – Grievance procedure.

BLOCK III: COLLECTIVE BARGAINING PROCESS

- UNIT 9 Process of collective bargaining – Problems and prospects – Bipartisan in agreements – Code of conduct and code of discipline –
- UNIT 10 Wage boards – Reports of wage boards – Management of strikes and lockouts – measures to stop strikes and lock outs Disputes – Impact – Causes – Prevention – Industrial Peace – Government Machinery – Conciliation – Arbitration – Adjudication.
- UNIT 11 Employee safety programme – Types of safety organization – functions – implications – features - Industrial Relations problems in the Public Sector – Growth of Trade Unions – Codes of conduct.

BLOCK IV: WELFARE SAFETY COMMITTEE AND

- UNIT 12 Safety committee – Ergonomics – Damage control and system, safety – insurance – grievance redressal.

- UNIT 13 Employee communication – House journals – Notice boards suggestion schemes – upward communication, personnel counselling and mental health –
- UNIT 14 Educational and social development – modern trends – employee education – NGC .Child Labour – Female Labour – Contract Labour – Construction Labour – Agricultural Labour – Differently abled Labour –BPO & KPO Labour - Social Assistance – Social Security – Implications

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5. Arun Monappa, Ranjeet Nambudiri, Patturaja Selvaraj. Industrial Relations & Labour Laws.Tata McGraw Hill. 2012

30834 - PRINCIPLES OF ECONOMICS

Objectives :

- A general knowledge of microeconomics: demand and supply, market mechanism, market failures, competition
- To understand concept and theories of Economics

BLOCK I: BASICS AND MANAGERIAL ECONOMICS

- UNIT 1** Exploring the subject matter of economics-Why study economics? Scope and Method of Economics; The Economic Problem: Scarcity and Choice. Reading and working with Graphs.
- UNIT 2** Introduction to Managerial Economics- Nature, Scope, Definitions of. Managerial Economics, Application of Managerial Economics to Business, Micro Vs. Macro Economics, opportunity costs, Time Value of Money, Marginalism, Incrementalism, Market Forces and Equilibrium.
- UNIT 3** Consumer Behaviour-Cardinal Utility Approach: Diminishing Marginal Utility, Law of Equi-Marginal Utility, Ordinal Utility Approach: Indifference Curves, Marginal Rate of Substitution, Budget Line and Consumer Equilibrium.
- UNIT 4** Demand Analysis- Theory of Demand, Law of Demand, Movement along vs. Shift in Demand Curve, Concept of Measurement of Elasticity of Demand, Factors Affecting Elasticity of Demand, Income Elasticity of Demand, Cross Elasticity of Demand.

BLOCK II: FEATURES OF ECONOMICS

- .UNIT 5** Theory of Production- Meaning and concept of Production, Factors of Production and Production Function, Fixed and Variable Factors, Law of Variable Proportion (Short Run Production Analysis), Law of Returns to a Scale (Long Analysis),
- UNIT 6** Cost - Concept of Cost, Cost Function, Short Run Cost, Long Run Cost, Economics and Diseconomies of Scale, Explicit cost and Implicit Cost, Private and Social Cost.
- UNIT 7** Marginal revenue and Marginal cost Meaning- – Optimum firm and Representative firm. Nature of costs in economics – Opportunity cost Vs Real cost
- UNIT 8** Fixed costs Vs Variable costs – Notion of marginal cost – Equilibrium of industry – Conditions of competitive equilibrium.

BLOCK III: THEORY OF INTEREST AND MARKET BEHAVIOUR

- UNIT 9** Interest – Interest as reward for waiting – Liquidity preference theory.Profit – Risk and uncertainty – Normal profits – Marginal productivity and profits.
- UNIT 10** Markets – Nature of competition-Meaning- Importance – Implication – Types of competition: Monopoly
- UNIT 11** Firm's Behaviour- Pricing Under Perfect Competition, Monopoly, Monopolistic Competition, Oligopoly, Duopoly, Bilateral monopoly, Monopolistic competition.Price theory and practices: Price discrimination under perfect competition

BLOCK IV: THEORY OF WAGES AND ECONOMIC ANALYSIS

- UNIT 12** Distribution: Wages – Marginal productivity–Theory of wages-Collective bargaining – Wage differentials – Wages and productivity Wage regulation.
- UNIT 13** Rent – Scarcity Vs Differential rents – Quasi rent– Rent as surplus over transfer earnings – Rent as economic surplus.
- UNIT 14** Macro Economic Analysis- Theory of income and employment, Classical, Modern (Keynesian), Approach. Macro-Economic Variables, Circular flow of income, National Income Concepts, definition and its measurement.

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2. *Samuelson Paul A, Economics*
3. *Edward Nevin, Text book of Economic analysis*
4. *Mehta P L, Managerial Economics.*

30841 - COMPENSATION MANAGEMENT

Objective:

- To know the Theories and factors of wages
- To understand the technique of compensation management

BLOCK I: BASICS OF COMPENSATION MANGEMENT

- UNIT 1 Introduction to Compensation, Rewards, Wage Levels and Wage Structures; Introduction to Wage -Determination Process and Wage Administration rules; -Pay - Compensation based on macroeconomic - micro economic factors – wage settlement – safety measures
- UNIT 2 Introduction to Factors Influencing Wage and Salary -Structure and Principles of Wage and Salaries Administration Wage theories – Evaluation of theories – Components of compensation – implications – problems – prospects
- UNIT 3 Introduction to Minimum Wages; Introduction to Basic Kinds of Wage Plans; Introduction to Wage-Differentials & Elements of a Good Wage Plans Wage Fixation Factors: Job factors – Personnel factors – Company factors
- UNIT 4 Trade unionism – Price levels – Competition factors – perfect competition – imperfect competition
- UNIT 5 Pay Fixation Process: Surveying pay and compensation practices – Designing pay structure.
- UNIT 6 Incentive Schemes: Monetary and Non-monetary dimensions – Incentive plans – Incentives for direct and indirect categories
- UNIT 7 Introduction to Importance of Wage Differentials; Introduction to Executive Compensation and Components of Remuneration Individual/ group incentives – Fringe benefits/ perquisites – Profit sharing

BLOCL II: PROCESS OF PAY FIXATION

- UNIT 8 Introduction to Nature and Objectives of Job Evaluation; Introduction to Principles and Procedure of Job Evaluation Programs; Introduction to Basic Job Evaluation Methods; Employee Stock Option Plan – Non-monetary incentive schemes: Types and relevance.

BLOCK III: KPP AND PERFORMANCE COMPENSATION

- UNIT 9 Performance Linked Compensation: Measuring performance – KPP - implications – problems- prospects Introduction to Implementation of Evaluated Job; Introduction to Determinants of Incentives; Introduction to Classification of Rewards; Incentive Payments and its Objectives.
- UNIT 10 Introduction to Institutional Mechanisms for Wage Determination Performance parameters – service benefit – merit cum reward –citation – token of gift - promotions
- UNIT 11 Performance compensation – Structure – measures – Key performance parameters - Control of employee cost – implications - problems.

BLOCK IV: CURRENT TRENDS IN WAGE INCENTIVES AND COMPENSATION

UNIT 12 Legislations regarding Compensations – Key provisions of Payment of Wages Act, Minimum Wages Act and Payment of Bonus Act.

UNIT 13 Current Trends in Compensation: Executive compensation – International compensation – Challenges and scope. Introduction to Planning Compensation for Executives & knowledge Workers

UNIT 14 Introduction to Wage Incentives in India; Introduction to Types of Wage Incentive Plans- Compensation and satisfaction – Compensation and motivation – Compensation for knowledge personnel.

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- 3. Dravid W Belcher, Wage and Salary Administration.*
- 4. Richard Henderson, Compensation Management in a Knowledge Based World.*

30842 - GLOBAL HUMAN RESOURCE MANAGEMENT

Objective:

- To understand the functions of Human Resource Management
- To know the process and strategies of Human Resource Management

BLOCK I: BASICS OF GLOBAL HUMAN RESOURCES MANAGEMENT

- UNIT 1 Nature and scope of International Human Resource Management (IHRM)-approaches to HRM-differences between domestic HRM and IHRM. Human Resources management: Overview of operative functions – Recruitment – Selection – Integration – Compensation
- UNIT 2 Training for development and separation – Challenges and opportunities of globalising HR. Human resource planning in IHRM- recruitment and selection- issues in staff selection of expatriates.
- UNIT 3 Global HR Recruitment and Selection: Home – Host – Third country nations – Selection criteria for global assignments

BLOCK II: GLOBAL HR INTEGRATION & COMPENSATION PROCESS

- UNIT 4 Global HR - Election process – Challenges of global placements – current scenario.
- UNIT 5 Global HR Integration Process: Process of integration – Motivation and team in HR – Cultural adoptability vis-à-vis Individuality
- UNIT 6 Managing cross-cultural diversities – Multiculturalism – Organisational culture of MNCs – Experiences of best run companies.
- UNIT 7 Global HR Compensation Process: Direct and indirect compensation – procedure – wage linked performance
- UNIT 8 International compensation – Pay for performance – Executive incentive pay – Pay differences – Causes and consequences

BLOCK III: GLOBAL HR TRAINING AND DEVELOPMENT PRACTICE

- UNIT 9 Compensation structure in MNCs – types – WTO – IBRD – Implications = problems Training and development -expatriate training-developing international staff and multinational teams. Brain drain and brain bank.
- UNIT 10 Global HR Training and Development Practice: Relevance of training and development Compensation-objectives of international compensation approaches of international compensation.
- UNIT 11 Area of training – Types: Standard Vs Tailor made training – Cultural assimilations and other approaches

BLOCK IV: HR RELATIONS MANAGEMENT

- UNIT 12 Impact of different learning styles on training and development – Leadership training-
Key issues in International relations-strategic choices before firms-strategic choices
before unions-union tactics
- UNIT 13 HR Relations Management: Labour relations in the international area – Relationship
between employer and employee
- UNIT 14 US, Japanese, UK, European approaches to labour relations –Role of strategic
management of international labour relations-Issues and Challenges of IHRM.

REFERENCE BOOKS:

1. Venkataraman C.S &Srivatsava B.K ‘Personnel Management and Human Resources, Tata Mcgrew Hill, New Delhi.
2. Prasad, L.M, Human Resource Management, SulleyChend& Sons, New Delhi.
3. Edwin Flippo, Personnel Management.
4. Memoria, CB, Personnel Management, Himalaya Publishing House, Mumbai.

30843 - EMOTIONAL COMPETENCE

Objective:

- To understand types and effects of emotional competence
- To know the strategies of emotional competence

BLOCK I: FUNDAMENTALS OF EMOTIONAL COMPETENCE

- UNIT 1 Emotions: Meaning – Types – Effects – Emotional Intelligence: Meaning – Significance –Working with emotional intelligence
- UNIT 2 Emotional Competencies: Meaning – Types: Personal competence – Social competence- intercultural communication- creative and critical thinking
- UNIT 3 Self-Marketing: The inner rudder – Source of gut feeling – Power of intuition – Emotional awareness – Recognizing one’s emotions and their effects
- UNIT 4 Accurate self-assessment – Knowing one’s inner resources - abilities and limits – Self-Confidence

BLOCK II: MUTUAL TRUST AND CONCIOUSNESS

- UNIT 5 Developing strong sense of one’s self-worth and capabilities - Personal Competence: Self-control
- UNIT 6 leadership straits-team work- career planning -Keeping disruptive emotions and impulses in check – passive emotions – stress
- UNIT 7 Trustworthiness and consciousness – mutual trust – relationship between individual and institutions
- UNIT 8 Adaptability – Innovation – Motivation: Achievement drive – Commitment – Initiative Optimism.

BLOCK III: LEADERSHIP TYPES AND SOCIAL SKILLS

- UNIT 9 Social Competence: Empathy: Understanding others – Developing others – Service orientation – Leveraging diversity – Political awareness.
- UNIT 10 Social Skills: Art of Influence – Communication – Conflict management-Organizational behaviour application of emotion and moods Training and development -Performance evaluation- Job enrichment, job enlargement, job analysis.
- UNIT 11 Leadership – meaning - Types – Characteristic – approaches – leaders: Types, scope, controlling techniques - Change catalyst – Building bonds

BLOCK IV: MULTIPLE INTELLIGENCE AND EMOTIONS

- UNIT 12 Collaboration and cooperation – Team capabilities- Group Vs. team – objectives of team and group – types – nature – Purpose.
- UNIT 13 Managing Emotions: Building emotional competence – -Emotional intelligence- Motivation - Definition -Theories -Work environment - Employee involvement – rewarding employees
- UNIT 14 Multiple intelligences- emotional intelligence- managing changes-time management- stress management Guidelines for learning emotion – Competence training – Best practices.

REFERENCE BOOKS:

1. Daniel Goleman, 'Emotional Intelligence', Bantam Books.
2. Daniel Goleman, 'Working with Emotional Intelligence', Bantam Books.

30844 - ORGANISATIONAL DEVELOPMENT

Objective:

- To know the concept and scope of Organization Development
- To understand the strategies of Organization Development

BLOCK I: BASICS OF ORGANISATIONAL DEVELOPMENT

- UNIT 1 Introduction to Organization Development – Concept – Nature and scope of organizational development
- UNIT 2 History of organizational development – Underlying assumptions and values.
- OD interventions meaning – methods - classifications of interventions - team interventions
- UNIT 3 Gestalt approach of team building - inter group interventions - comprehensive interventions Theory and practice of organizational development – Operational components
- UNIT 4 Diagnostic, action and process – Maintenance component – nature – scope – implications

BLOCK II: ACTION RESEARCH

- UNIT 5 Action Research as a process – An approach – History – Use and varieties of action research
- UNIT 6 When and how to use action research in organizational development – concept - nature.
- UNIT 7 Organizational development interventions – Team interventions – Inter-group interventions
- UNIT 8 Personal, interpersonal and group process interventions – implications- OD diagnosis - action component - OD interventions - action research - its application and approach

BLOCK III: MBO AND QWL

- UNIT 9 MBO - quality circle – TQM - QWL (quality of work life) Physical setting etc., Training – T groups - coaching and mentoring and other methods
- UNIT 10 Implementation and assessment of organizational development – Conditions for success and failure
- UNIT 11 Ethical standards in organizational development – Organizational development and organizational performance – Implications.

BLOCK IV: KRA AND RESEARCH ON ORGANIZATIONAL DEVELOPMENT

- UNIT 12 Key consideration and issues in organizational development- Comprehensive interventions – Structural interventions.
- UNIT 13 Models and theories of planned change - teams and teamwork - applied behaviour science Future of organizational development - current scenario – barriers-implications

UNIT 14 Consultant – client relationship - power, politics and OD Research on OD - Indian experiences in organizational development – lesson drawn from abroad

REFERENCE BOOKS:

1. French and Bell, Organizational development, Prentice Hall, 1995.
2. French, Bell, Zawach (Edn) Organization Development: Theory, Practice and Research. UBP.
3. Rosabeth Moss Kanter, The Change Masters, Simon & Schuster.
4. Wendell, L. French, Cecil H. Bell, “Organization Development”, Prentice Hall, 6th Edition 2008

M.A (CC &E)

Sl. No.	Course Code	Title of the Course	CIA Max.	ESE Max.	TOT Max	C
FIRST YEAR						
I Semester						
1.	31211	Principles of Child Development	25	75	100	4
2.	31212	Child health and nutrition	25	75	100	4
3.	31213	Education of the young child	25	75	100	4
4.	31214	Field Work Practicum I	25	75	100	4
		Total	100	300	400	16
II Semester						
5.	31221	Child in the emerging Indian society	25	75	100	4
6.	31222	Pre-school educational activities	25	75	100	4
7.	31223	Rights of the child and child care in India	25	75	100	4
8.	31224	Field Work Practicum II	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III Semester						
9.	31231	Education of children with special needs	25	75	100	4
10.	31232	Planning and organization of institutions of young children	25	75	100	4
11.	31233	Research in child studies	25	75	100	4
12.	31234	Field Work Practicum III	25	75	100	4
		Total	100	300	400	16
IV Semester						
13.	31241	Pre-school home community linkages	25	75	100	4
14.	31242	Educational and Instructional Technology for young children	25	75	100	4
15.	31243	Practices of child Rearing	25	75	100	4
16.	31244	Field Work Practicum IV	25	75	100	4
			100	300	400	16
		Total	400	1200	1600	64

e. 2. Detailed Syllabi:

FIRST SEMESTER

Course Code	Title of the Course
31211	Principles of Child Development

Objectives

On completion of the course the students will be able to

- Define the meaning of growth
- State the Stages of development
- Understand physical growth during infancy, to early childhood
- Explain the Cognitive development of children
- Describe the Socio-emotional development of children

Outcomes of the course:

- The course will enrich the knowledge on growth and development, Cognitive development of children and Socio-emotional development of children.
- The course will help the students to answer the questions in competitive exams viz., SET, NET, GATE, etc. successfully.

BLOCK - I: GROWTH AND DEVELOPMENT

UNIT I

Meaning of growth – Stages of development –the stages of infancy-the stage of childhood- Areas of development -principles growth and development

UNIT II

Importance of the study of development – General principle of development – Genetic factors in development –supportive evidences of heredity.

UNIT III

Importance of environmental factors in development – physical environment-mental environment-social environment-Supportive evidences of environment.

UNIT IV

Physical growth during infancy-the appearance of the new born- Physical growth during Babyhood- Physical growth during early childhood.

BLOCK - II: DEVELOPMENT OF MOTOR SKILLS

UNIT V

Development of different parts of the body –the head-the face-the trunk- height & weight- sight-speech and hearing.

UNIT VI

Development of gross motor skills and fine motor skills –running-jumping-skipping and hopping-climbing-swimming-self doing- Promoting motor skills.

UNIT VII

Cognitive development – Meaning of cognition- definition of cognition - psychological meaning.

UNIT VIII

Piaget's theory with special reference to development up to the period of early childhood- Achievement in stages of intellectual development according to Piaget.

BLOCK - III: LANGUAGE DEVELOPMENT

UNIT IX

Acquisition of concept – development of concept of objects- development of imagination- development of moral standards- development of aesthetic standards - a few cognitive abilities of the pre-school child.

UNIT X

Language development – Learning to speak – Factors influencing language development – Activities relating to Language development.

UNIT XI

Individual difference in acquisition of language – Development of vocabulary of language rules- Promoting language skills – Speech problems in childhood.

BLOCK - IV: SOCIO-EMOTIONAL DEVELOPMENT

UNIT XII

Meaning of Emotion- Development of Emotions-Differentiation of Emotion during the first two years.

UNIT XIII

Meaning of Socio-emotional development – Interacting with the infant and children.

UNIT XIV

Development of attachment – Learning to relate – attachment-Trust-temper tantrums..

UNIT XV

Emotional expressions of children – Love, fear, rivalry, anger, frustration- bed wetting- withdrawn behavior, aggression and stealing -ways of handling.

REFERENCES

1. Erikson H Erick, "Childhood and Society", Penguin, 1969.
2. George G Thompson, "Child Psychology", The Times of India, 1965.
3. Issacc Susan, "The Nursery Years", Routledge, London, 1956.
4. Craig Grace J, and Marguerite Kermis, "Children Today", Allyn and Bacon, New Jersey, 1995.
5. Gordon Ira J, "Human Development", D.B.Taraporevala, Mumbai, 1970.
6. Todd V E and HelersHeffernon, "The Years Before School", Macmillan, London, 1970.
7. Sharma Adarsh, "Social and Personal Development of the Young Child", ECEIM Services, 1996.
8. Paul Henry Mussen, et-al, "Child Development and Personality", Harper & Row, New York, 1977.

Course Code	Title of the Course
31212	Child health and nutrition

Objectives

On completion of the course the students will be able to

- Describe the concept of nutrition.
- State the Indicators of health.
- State the Nutritional requirements of children of different age groups.
- Explain Major deficiency diseases of children and their prevention.
- List Common childhood ailments.
- Describe Major nutrition and health programmes for children.

Outcomes of the course:

- The course will impart the adequate knowledge about nutrition, Indicators of health, Major deficiency diseases of children and some Common childhood ailments.
- The course will help the students to have an insight on Nutritional requirements of children of different age groups.

BLOCK - I: NUTRITION AND HEALTH

UNIT I

Introduction-The concept of nutrition –Meaning of nutrition- Interrelation between nutrition and health – Indicators of health.

UNIT II

Health situation in India – National Health Policy – Health care services – Health care delivery system in our country- Ensuring health for all.

UNIT III

Introduction to Nutritional requirements- Nutritional requirements of children of different age groups – Infancy and early childhood and middle childhood.

UNIT IV

Planning balanced diets for children of different age groups –Recommended dietary intakes for infants- Emotional and Psychological aspects of infant feeding.

BLOCK - II: NUTRITIONAL PROBLEMS

UNIT V

Introduction- Planning Balanced diet for toddlers and preschoolers-Nutritional requirements among pregnant and lactating women-Influence of lactation on nutrient needs.

UNIT VI

Major deficiency diseases of children and their symptoms – Protein, energy, malnutrition and exophthalmia – Nature, clinical features, causes, treatment and prevention

UNIT VII

Other nutritional problems – ‘B’ complex deficiency – Vitamin ‘D’ deficiency – Vitamin ‘C’ deficiency.

UNIT VIII

Common childhood ailments – prevention and management- Introduction to Common childhood accidents and first aid- preventing injuries and accidents-giving first aid.

BLOCK - III: FOOD SUPPLEMENTATION PROGRAMME

UNIT IX

Nutrient deficiency control programmes such as national prophylaxis programmes for prevention of blindness due to vitamin 'A' deficiency –

UNIT X

National nutrition anemia control programme and National iodine deficiency disorders control programme –

UNIT XI

Food supplementation programme such as Integrated Child Development Services (ICDS), Mid Day Meal programme (MDM), Special Nutrition Programme (SNP) and Balwadi Nutrition Programme (BNP).

BLOCK - IV: HEALTH PROGRAMMES

UNIT XII

Major health programmes – Health programmes such as National Immunization programmes – National Family Welfare programme.

UNIT XIII

National programme for Control of Blindness – National Mental Health Programme – Child Survival and Safe Motherhood programme.

UNIT XIV

Assessment of nutrition status – Methods such as anthropometric measurements, diet survey, growth monitoring – Personal hygiene as an essential factor for health of the children.

REFERENCES

1. Ali Mohamad: "Food and Nutrition in India", K.B. Publications, New Delhi.
2. "National Seminar on Nutrition Education", NCERT, 1975.
3. Rirchie A S Jean, "Learning Better Nutrition", Raner, Italy, 1967.
4. Holmes C Alan, "Visual Aids in Nutrition Education", FAO, Rome, 1969.
5. Fee, "A Handbook for Nutrition Trainers of Anganwadi Worker", NIPCCD, 1994.
6. BrakhaneJeanmette, Robert E Rockwelt, "Food, Nutrition and the Young Child", Missowri, St. Louis, 1985.
7. Cameron Margaret & HotwanderYugne, "Manual on Feeding Infants and Young Children", UNICEF, New York.

Course Code	Title of the Course
31213	Education of the young child

Objectives

On completion of the course the students will be able to

- Trace the development of early childhood education through the contributions of child educators such as Froebel, Montessori, Tagore and others.
- State Recommendations of the National Policy on Education (1986)
- Identify the sources of finance for institutions of young children.
- State the play way methods of educating children.
- Describe Basic features of Minimum Level of hearing (MLL)

Outcomes of the course:

- The course will impart the wisdom about the development of early childhood education.
- The course will identify the sources of finance for institutions of young children.
- The course will describe Basic features of Minimum Level of hearing (MLL).

BLOCK - I: EARLY CHILDHOOD CARE AND EDUCATION

UNIT I

Early childhood care and education – Its scope – Rationale- aims of Theoretical orientations in early childhood education.

UNIT II

Contributions of Rousseau, Froebel, Montessori, Tagore, TarabaiModak and AnutaiWagh – Head Start Programme – The system of pre-basic education of Gandhi.

UNIT III

Challenges of Indian education at preprimary and primary education-development of primary education in free India- Equalization of educational opportunities-Education of the girl child.

UNIT IV

The problem of wastage and stagnation – Education of the girl child – Pre-school education in strengthening the primary education.

BLOCK - II: NATIONAL POLICY ON EDUCATION (1986)

UNIT V

Recommendations of the National Policy on Education (1986) on early childhood care and Education at Elementary education.

UNIT VI

Financing of education of young children grant-in-aid for creches – National Creche Fund – Sources of finance.

UNIT VII

Policies and programmes of the Centre and State for the five year plans – Rules of recognition and grant-in-aid.

UNIT VIII

Welfare extension projects-integrated child welfare services-family and child welfare projects-supplementary nutrition programme.

BLOCK - III: EDUCATING THE YOUNG CHILD

UNIT IX

Chittibabu Committee Report on Code of Regulations for Nursery and Primary School-Study of Tamil Schools – Minimum specification for pre-schools.

UNIT X

Educating the young child – Learning through play – Activities for promoting cognitive and language skills.

UNIT XI

Activities for sensory exploration – Play activities for pre-reading and pre-writing skills – Music and movement.

BLOCK - IV: MINIMUM LEVEL OF LEARNING (MLL)

UNIT XII

Basic features of Minimum Level of Learning (MLL) – MLL in language – MLL in mathematics – MLL in environmental studies,

UNIT XIII

Non-cognitive areas of learning – Evaluation as an essential input to primary education.

UNIT XIV

Definition of Curriculum- Curricular load for children-planning Curriculum for pre schools and primary education-develop self-esteem and optimistic attitudes-objectives and the content of primary curricula.

REFERENCES

1. AmbergLemore, “Raising Children Bilingually”, Multilingual Malters Ltd. 1987.
2. Annie I Butler, “Early Childhood Education”, D.VanHogland, New York, 1974.
3. Bernard Spodek, “Early Childhood Education”, Prentice Hall, New Jersey, 1976.
4. WaghAnutai, “Parent and Community”, ECEIM, 1979.
5. Sharma Adarsh, “Social and Personal Development of the Young Children”, ECEIM, 1987.
6. Taneja V R, “Education: Thought and Practice”, Delhi University Publishers.
7. Rusk Robert, “The Doctrine of Great Educators”, McGraw Hill, 1964.
8. Sylvia Krown, “Threes and Fours go to School”, Prentice Hall, New Jersey, 1974.
9. Report of the National Education Commission (1964-66), MHRD, New Delhi.

Course Code	Title of the Course
31214	Field Work Practicum I

Practical details –**ANY 10**

1. Observation of children of different stages with regard to physical, motor, emotional, intellectual development.
2. Observing any one problem behaviour among children and recording it.
3. Preparation of case studies of children.
4. To observe a child over a period of time to study trends in development.
5. To do a nutritional survey of children in different age group.
6. To visit pediatric section of hospitals to find out common ailments among children and their treatment.
7. To check up children to find out any symptoms of deficiency diseases.
8. To survey food habits and beliefs of parents related to food habits.
9. To visit noon centers and record their activities.
10. To prepare simple but nutritional food items and keep a record.
11. Observation of teaching in pre-primary and primary schools.
12. Collecting simple games, stories, rhymes and action songs suitable for children.
13. Visiting pre-primary and primary schools to find out whether they fulfill minimum specifications.
14. Critical analysis of code of regulations for nursery and primary schools.
15. Collecting curricular materials for pre-primary and primary education.

SECOND SEMESTER

Course Code	Title of the Course
31221	Child in the emerging Indian society

Objectives

On completion of the course the students will be able to

- Describe the structural aspect of the Indian family and the family's role in socialization of the child.
- State the Patterns of parenting and their impact on the child.
- Explain the roles of religions, institutions in the socialization of the child.
- Describe the Social practices of child development.
- State the Characteristics of Indian Society.

Outcomes of the course:

- The course will give a clear picture on Indian family and the family's role in socialization of the child.
- The course will train the students to understand the patterns of parenting and their impact on the child.
- The course will analyze the social practices of child development.

BLOCK - I: CHILD AND THE STRUCTURAL ASPECT OF THE INDIAN FAMILY

UNIT I

The Child and the structural aspect of the Indian family – Type of family – 'Significant others' in the family – Family size.

UNIT II

Dynamics of social interaction – Role of family in socialisation of the child – Their stages in child socialization – Internalization.

UNIT III

Role expectations of a child – Sex stereotyping of role – Changing concept of childhood – Western values and ideas.

UNIT IV

Social agencies of child development – Stages of parenting-parental development-event of birth and its significance-major adjustments necessitated by birth.

BLOCK - II: PATTERNS OF PARENTING

UNIT V

Patterns of parenting- Democratic, autocratic, authoritarian –the nature of parent child relations- Parent-child interaction.

UNIT VI

Parent behaviour-- Parent behaviour dimensions-Oedipus complex and Electra complex in children – The neglected child – After care homes.

UNIT VII

Maternal deprivation-Institutionalized child-Social institutions-Influence of Religious institutions – Roles of church, mosque, temple.

UNIT VIII

The process of social weaning – Schools, textbooks – The pre-school, play group, mass media – Television.

BLOCK - III: CHILDREN'S STYLES OF LIFE

UNIT IX

Peer relations and play group-Group relations-Development of Altruism-Children's styles of life – Community and caste.

UNIT X

Social practices, customs, rituals and child care – Concept of childhood – Sex determination.

UNIT XI

Practice of female infanticide and foeticide –Infant and child mortality-child care programmes in India- Causes and consequences.

BLOCK - IV: GOVERNMENT SCHEMES OF TAMIL NADU FOR THE GIRL CHILD

UNIT XII

Schemes of the Government of Tamil Nadu for the girl child – Cradle baby scheme – Sex ratio – The fertility rates by sex – Late marriages – IMR by sex.

UNIT XIII

Indian Society – Characteristics of Indian society-Social group – Indian social system-Village community, caste system, joint family.

UNIT XIV

Plurality of culture – Unity in diversity – Urban way of living – Housing – Crime-migration and children – Employment pressure.

UNIT XV

Western values and ideas – Religion and education in child development- ethnic groups- racial groups – Education and eradication of class and race prejudices-Their importance in the context of child development.

REFERENCES

1. Bosard James H S and Eleanor Stoker Boll, “The Sociology of Child Development”, 4thed, Harper & Row, London, 1966.
2. Berk Laura E, “Infants, Children and Adolescents”, 2nded, Allyn and Bacon, Singapore, 1966.
3. Medinnus, Gene R and Ronald C Johnson, “Child and Adolescent Psychology”, John Wiley, New York, 1976.
4. Bijou Sidney W, “The Basic Stage of Early Childhood”, Prentice Hall, New Jersey, 1976.
5. Rajammal P Devadas and N Jaya, “A Textbook on Child Development”, Macmillan, Chennai, 1984.
6. Craig Grace J and Marguerite Kermis, “Children Today”, Prentice Hall, New Jersey, 1995.

Course Code	Title of the Course
31222	<i>Pre-school educational activities</i>

Objectives:

On completion of the course the students will be able to

- Study about the Objectives of Pre-School Education.
- Understand about the Classification of Educational Activities based on age level of the child
- Reveal the Educational activities to promote cognitive abilities.

Outcomes of the course:

- The course will give a clear picture on the Objectives of Pre-School Education.
- The course will train the students to Understand about the Classification of Educational Activities based on age level of the child
- The course will reveal the Educational activities to promote cognitive abilities.

BLOCK - I: PRE-SCHOOL EDUCATION

UNIT I

Introduction-Objectives of Pre-School Education – Educational Activities (E.A) - Meaning – Importance.

UNIT II

The Pre-primary school as a centre for play-Pre-school as a centre for play activities- Pre-school as a centre for stimulation and developmental activities.

UNIT III

Classification of Educational Activities based on age level of the child, domains of development, grouping of children, based on level of teacher supervision and place of activity.

UNIT IV

Educational activities for gross muscle co-ordination - activities for motor development of the toddlers and preschoolers

BLOCK - II: EDUCATIONAL ACTIVITIES FOR PRE-READING AND PRE-WRITING UNIT V

E.A. to promote sensory – motor and fine-muscle coordination – Indoor and outdoor equipments to promote gross muscle and fine muscle coordination.

UNIT VI

Introduction to Pre-reading and Pre-writing activities to promote language development- Stories for children.

UNIT VII

Teaching Rhymes, Music- Creative Drama for the young child – suitability of themes for young children – Activities for creative self-expression.

UNIT VIII

Educational activities to promote cognitive abilities for toddlers and preschoolers – Providing simple science experience activities.

BLOCK - III: EDUCATIONAL ACTIVITIES TO PROMOTE COGNITIVE ABILITIES

UNIT IX

Promoting cognitive abilities-Activities for observation, grouping seriation / sequencing – enhancing memory – simple problem solving – Introducing Pre-number concepts.

UNIT X

Concept formation- Educational activities for Socio – emotional development –Role Play.

UNIT XI

Simple science experience activities-Imaginative Play Activities – Drama – Activities for Channelization of emotions.

BLOCK - IV: PLANNING AND ORGANIZING EDUCATIONAL ACTIVITIES

UNIT XII

Planning and Organizing Educational Activities – Effective Use of Indoor and Outdoor space.

UNIT XIII

Improvised teaching aids using rural and urban waste materials – Organizing Simple Traditional Games for young Children.

UNIT XIV

Monitoring child's progress in Educational Activities-Assessment schedule for child's progress in Educational Activities.

REFERENCES

1. 'Activity-Based Curriculum for Pre-School Education', Indian Association for Pre-School Education, 2000.
2. 'Stimulation Activities for Young Children', RajalakshmiMuralidharan and ShobikaAsthana, New Delhi : NCERT, 1999.
3. 'Strategies for Effective Pre-School Education', Indian Association for Pre-School Education, 1999.
4. 'A Textbook on Child Development', Rajammal P. Devadas and N. Jaya, Coimbatore : Macmillan India Ltd., 1991.
5. Publications of IAPE on Play, Music, Drama and other activities for the Pre-Schoolers.

Course Code	Title of the Course
31223	Rights of the child and child care in India

Objectives:

On completion of the course the students will be able to

- Understand the basic rights of the children
- Describe the means of Protecting the basic rights of the children
- Justify the Need for child care
- Concept of child care
- Describe a few successful experiments to child care
- State the role of Child Welfare organizations

Outcomes of the course:

- The course will nurture the knowledge and understand the basic rights of the children
- The course will give an expertise in understanding the means of Protecting the basic rights of the children
- The course will describe the role of Child Welfare organizations.

BLOCK - I: BASIC RIGHTS OF THE CHILD

UNIT I

Profile of children of the world – Convention of the rights of the child – Four sets of basic rights.

UNIT II

Major goals for child survival, development and protection – Measures to promote children's rights – goals for the year 2000 fixed by the Government of India.

UNIT III

Protecting the basic rights of the children – Providing safe drinking water, nutritious food and health services.

UNIT IV

Protecting children from exploitation and abuse – Child labour as exploitation of children – Legal protection for child labour.

BLOCK - II: CONCEPT OF CHILD CARE

UNIT V

Provision of children's homes and adoption facilities for street children and orphans.

UNIT VI

Concept of child care – Need for child care – Types of child care.

UNIT VII

A few innovative approaches to child care as a support service for working women.

UNIT VIII

Social and economic justification for early childhood care and education.

BLOCK - III: CHILD CARE CENTERS

UNIT IX

Family and community participation in child care – Family day – Care center in Mumbai.

UNIT X

Mobile crèches in Delhi and Mumbai for construction worker's children – Community pre-schools for the rural poor.

UNIT XI

The Tamilnadu Experiments Palmyrah Workers Development Society, Martandom.

BLOCK - IV: CHILD WELFARE SERVICES

UNIT XII

Child care in other countries – Parent run daycare centers of France – The Beta Israel Project.

UNIT XIII

Child Welfare Services – State level services – Balwadi – Anganwadi.

UNIT XIV

Role of organizations providing child welfare services in India – NCERT, ICCW, CSWB, and NIPCCD.

REFERENCES

1. Chhabra Rami Petterson Willy, "The Situation of Children in India", 1979.
2. Erikson H Erick, "Childhood and Society", Pergium Dorks Ltd, 1969.
3. SlackotaneFesser, "Education and Daycare for Young Children in Need", The American International, Geneva, 1985.
4. De'Souza Alfred, "Children in India: Critical Issues in Human Development", 1979.
5. Jameson Kenneth, "Pre-school and Infant Studies", Vista, London, 1972.
6. "Why Children Matter", Bernard Van Leer Foundation (BVLf), 1994.
7. SalachSimcha, "In First Person Plural", BVLf, 1993.
8. Ruthpaz, "Paths to Empowerment", BVLf, 1990.

Course Code	Title of the Course
31224	Field Work Practicum II

ANY 10

1. Observing a child in different social contexts- family, play group, and school and keeping a record.
2. Observing the different levels of interactions in the family- joint, nuclear and big families.
3. Recording conversations between children and analyzing it from sociological point of view.
4. Studying impact of mass media on the behaviour of the child.
5. Interviewing mothers of three generations and recording their child rearing practices.
6. Observation of welfare institutions for young children from the point of view of how far the children's rights are protected.
7. Evolving proforma to assess the existing condition of child welfare homes.
8. Visit to Balwadis and Anganwadis.
9. Interviews with working mothers to find out how they meet the needs of care of their children.
10. Making an assessment of needs. Availability, access and utilization with reference to child care facilities in various factors and sections of the community.
11. Recording of successful child care experiments in local areas.

THIRD SEMESTER

Course Code	Title of the Course
31231	Education of children with special needs

Objectives of the Course:

On completion of the course the students will be able to

- Understand the Meaning of the expression ‘Special Children’
- Identify the Categories of Special Children.
- The course will Describe the educational provisions of physically handicapped in India.
- Identify the mentally retarded and ways of educating them.
- Understand the technique of identifying gifted children.
- State the ways of Promoting education of the gifted and creative children.
- Develop an understanding to prevent disabilities, involvement of the families, community, the person with disability and the existing health infrastructure.
- Understand and develop skills for imparting rehabilitation therapy

Outcomes of the Course:

- The course will give the Meaning of the expression ‘Special Children’
- The course will describe the educational provisions of physically handicapped in India.
- The course will make the learners Identify the mentally retarded and ways of educating them.
- The course will make the learners to Promote education of the gifted and creative children.
- The course will make the learners to Understand and develop skills for imparting rehabilitation therapy.

BLOCK - I: SPECIAL CHILDREN

UNIT I

Concept of Special Children – Meaning and definition of Special Children – Categories – Handicapped and the gifted.

UNIT II

Physically handicapped – visually impaired children- hearing impaired-Types of hearing defects-Speech impaired children.

UNIT III

Mentally retarded – Gifted and talented-Culturally disadvantaged – Socially disadvantaged – Their needs and education.

UNIT IV

Visually handicapped – Categories and characteristics – Identification, correction and medical treatment.

BLOCK - II: EDUCATION OF THE SPECIAL CHILDREN

UNIT V

Education of the visually handicapped – Grades of Braille-Limitations of Braille -Instructional materials-Technological and special aids.

UNIT VI

Speech and hearing impaired children-Definition-Speech and hearing disorders- Nature – Types –Characteristics of Speech and hearing impaired children -Causes – Identification of problems.

UNIT VII

Educational provisions for the physically handicapped in India-The role of All India Institute of Speech and Hearing Handicapped (AIISH).

UNIT VIII

Definition of Mentally retarded – Degrees of mental retardation – Identifying the mentally retarded – Characteristics -Causes-Working with a mentally disabled child.

BLOCK - III: GIFTED CHILDREN

UNIT IX

Gifted children – Concept – Characteristics – Needs-Identification of gifted children – Creativity – Meaning – Identification-Promoting education of the gifted and creative children.

UNIT X

Sensitization & mobilization towards community organization-Need and Importance. Awareness programs for disability using mass media such as art, music, puppet, theatre, street theatre, dance, drama etc.

UNIT XI

Approaches to Therapeutic Rehabilitation services- Neuro developmental therapy- Physical therapy-Occupational therapy-. Speech therapy- O&M training- Visual & speech perceptual training-- Adaptive mobility devices - Medications

BLOCK - IV: DISABILITY AND REHABILITATION

UNIT XII

Rehabilitation aids and tools- : Orthotics &Prosthetics - Occupational therapy- Training in activities of daily living for rehabilitation- Self-help devices -Instrumental activities of daily living - Environmental control units,

UNIT XIII

Developmental aids and the skills to develop developmental aids using locally available materials, Adaptive devices, Low cost aids

UNIT XIV

Research in disability Rehabilitation - Need and scope of research in the field of disability and rehabilitation -- Science & scientific thinking-Problems faced by rehabilitation specialists in research. Qualities of good research worker in disability area.

REFERENCES

1. Daniel P Hallahan and James M Kauffman, "Exceptional Children: Introduction to Special Education", Prentice Hall, London, 1991.
2. Blake K A, "The Mentally Retarded: An Education Psychology", Prentice Hall, New Delhi, 1976.
3. Indira Swaminathan, "Developing Creativity in Young Children".
4. Jangira, N.K. et-al, "Source Book for Teaching Visually Disabled Children", NCERT, New Delhi, 1988.
5. UdayShanker, "Exceptional Children", Sterling Publ. New Delhi, 1984.
6. Mani MNG, "Techniques of Teaching Blind Children", Sterling, New Delhi.
7. Garret J F, "Psychological Aspects of Physical Disability", Washington, 1952.

Course Code	Title of the Course
31232	Planning and organization of institutions of young children

Objectives of the Course:

On completion of the course the students will be able to

- Describe the Physical set up of the day center, pre-school and primary school.
- State the Guiding principles for programme planning for institutions of young children.
- List the important Furniture, equipment and appliances necessary for institutions of young children.
- Understand the maintenance of such equipment's.
- List the Records to be maintained in institutions of young children.
- Describe the importance of Parent education programme.
- Describe the strategies for Securing cooperation from the parents in the community.

Outcomes of the Course:

- The course will enlighten the Physical set up of the day center, pre-school and primary school.
- The course will make the learners understanding about the Guiding principles for programme planning for institutions of young children.
- The course will make the learners understanding about the importance of Parent education programme.

BLOCK - I: PHYSICAL SET UP OF THE DAY CENTER

UNIT I

Design of a preschool-classroom arrangement-Physical set up of the day center, pre-school and primary school.

UNIT II

Building – Site – Location – Ventilation – Light arrangement – Floor and space – School garden –Playground.

UNIT III

Additional areas for children-Provision of safe drinking water and sanitary conditions.

UNIT IV

Guiding principles for programme planning – Setting up and running a child care Centre.

BLOCK - II: SHORT-TERM AND LONG-TERM PLANNING

UNIT V

Planning of activities and programmes of the preschool and primary school – Short-term and Long-term – Daily schedule – Weekly planning.

UNIT VI

Planning for the term and yearly planning – Curriculum and Lesson plan-Time-table and Calendar.

UNIT VII

Developmental characteristics of preschoolers-Furniture, equipment and appliances – Criteria for selection and purchase.

UNIT VIII

Their functional utility and maintenance – Indoor and outdoor equipments- Equipments suitable for different age groups.

BLOCK - III: MAINTAINANCE OF RECORDS

UNIT IX

Records to be maintained in a crèche-Need and importance of school records-Some Records to be maintained in pre-school.

UNIT X

Importance, types and maintenance – Admission register, fee register, library register, stock book, school cash book, and cumulative records.

UNIT XI

Parent education programme – Programme for the parents and community – Purpose – Organization – Motivation of the community.

BLOCK - IV: PARENTAL INVOLVEMENT OF THE SCHOOL

UNIT XII

Methods of educating the parents in the community – Securing cooperation through strategies such as home visits, interviews, group discussion.

UNIT XIII

Parent-teacher meetings, exhibitions, lecture by specialists, pamphlets, booklets, posters, newsletter, and picnics.

UNIT XIV

Parental involvement of the school and the community in programmes for the children – ‘AnnaiarKazhagam’ (Mother’s Association).

REFERENCES

1. WaghAnutai, “Parent and Community”, ECEIM, 1979.
2. Allen of Hurtwood, “Planning for Play”, Thames & Hudson, London, 1971.
3. Herron R E, “Children’s Play”, Johnwiley, London, 1971.
4. Betty L Broma, “Early Years in Childhood Education”, Rand McNally, Chicago, 1978.
5. Annie L Butler, “Early Childhood Education”, D.VanHogland, New York, 1974.
6. Brophy J E et-al, “Teaching in the Pre-school”, Harper and Row, New York, 1975
7. GolbyGreenward and West, “Curriculum Design”, ELBS, London, 1979.
8. RajalakshmiMuralidharan and Uma Banaerjee, “A Guide for Nursery School Teacher”, NCERT Publication.

Course Code	Title of the Course
31233	Research in child studies

Objectives of the Course:

On completion of the course the students will be able to

- Describe Common methods used to study children.
- Explain General research designs for studying children.
- Describe the different approaches to the study of the children.
- Understand the various methods of Developmental research.
- Explain the different methods of observational child study with their uses.
- Understand the ways of assessing different areas of Development of child.

Outcomes of the Course:

- The course will make the student aware about Common methods used to study children.
- The course will make the learners to understand about General research designs for studying children.
- The course will make the learners know about the different approaches to the study of the children.
- The course will make the learners to understand the ways of assessing different areas of Development of child.

BLOCK - I: CONCEPT OF RESEARCH

UNIT I

Concept of Research – Meaning of Research – Importance of Research – Characteristics of Research-Significance of Research.

UNIT II

Need for research on children –Importance of research on children- Problems of research on children.

UNIT III

Types of research- fundamental research, applied research, and action research – Areas of research in child studies.

UNIT IV

Steps in developing a research project – Selection of a research problem – Where to look for problem of research.

BLOCK - II: CRITERIA FOR SELECTION OF THE PROBLEM

UNIT V

Criteria for selection of the problem – Justifying the significance of the problem – The value of review of related literature.

UNIT VI

Evaluation of a problem-Hypothesis – Meaning – Formulating types – Sampling – Meaning – Need – Types of sample designs-Techniques.

UNIT VII

Common methods used to study children – Systematic observation (naturalistic observation and structural observation).

UNIT VIII

Self reports (clinical interview, structural interview, questionnaires and psychological test) – Clinical method (case study)- Ethnography – Construction and standardization of research tools.

BLOCK - III: GENERAL RESEARCH DESIGNS

UNIT IX

General research designs – Co-relational designs – Experimental designs – Types of Experimental designs- Application of Experimental Technique in child studies.

UNIT X

Designs for development in child studies – The longitudinal design – The cross sectional design.

UNIT XI

Changes in procedure during longitudinal studies-Problems in conducting longitudinal and cross sectional research-Analysis of longitudinal data.

BLOCK - IV: ETHICS IN RESEARCH ON CHILDREN

UNIT XII

Ethics in research on children – Guidelines for ethical research practice-Need and importance of Ethics in research on children.

UNIT XIII

Analysis of research data and report writing – Qualitative data analysis – Descriptive and inferential statistics.

UNIT XIV

Preparation and evaluation of research report on children – Writing of qualitative research report on children.

REFERENCES

1. Bhatia H R, “Understand your Children”.
2. Driscoll G, “How to Study the Behaviour of Children”.
3. Straney Ruth, “Introduction to Child Study”.
4. Slee Philip T, “Child Observation Skills”.
5. Thomson George G, “Child Psychology”, Surjeet Publ. Delhi, 1979.
6. JorBagh, “Study of the Young Child”, UNICEF, New Delhi.
7. Best John W, “Research in Education”, Prentice Hall, New Delhi, 1985.
8. Buch M B, “The Fifth Survey of Research in Education”, NCERT, New Delhi, 1996

Course Code	Title of the Course
31234	Field Work Practicum III

ANY 10

1. Visit to schools meant for children with special needs.
2. Observing the teaching method.
3. Identifying a gifted child in the class.
4. Visit to schools with integrated approach to education of children with special needs.
5. Survey of buildings for day-care centers, pre-primary schools, primary schools and preparing a model plan for a building.
6. Preparation for time table for different institutions for the young children
7. Preparation of a calendar for the school.
8. Visits to these institutions and gathering information about maintenance of different registers.
9. Preparation of low-cost and non-cost teaching aids.
10. To gather traditional beliefs about child development and keeping a record of time. Also to verify how scientific or otherwise the beliefs are.
11. To list problems related to studying children based on field work.
12. To conduct a case study of a child and keeping a record of it.
13. To assess the different areas of development using scales developed for the purpose.
14. To observe children and keep a record of the developmental activities.
15. To observe the same child over a period of time to study trends in development.
16. To get experience in constructing various tools for research used for studying the child.

FOURTH SEMESTER

Course Code	Title of the Course
31241	<i>Pre-school home community linkages</i>

BLOCK - I: COMMUNITY

UNIT I

Community – Meaning and scope – Types of communities – Pre-school as a part of the community – Home as a sub-system in the society – Child as a link between the home and the community.

UNIT II

Linking objectives of pre-school education with the expectations of the parents, and the community.

UNIT III

The importance of partnership between the pre-school and the parents; and the link between the pre-school and the community.

UNIT IV

Communication as an essential component in establishing linkage – Hurdles in establishing the linkage – Ways to overcome barriers communication.

BLOCK - II: FORMAL AND INFORMAL STRATEGIES

UNIT V

Strategies for enhancing pre-school-parent partnership – Ensuring involvement of rural and urban parents in the pre-school programme.

UNIT VI

Formal and informal strategies: Parent-teacher meetings, observing parents day, newsletters, circulars, bulletin boards.

UNIT VII

Home visits and informal discussion, games with parents, simple celebration of birthdays, wedding anniversaries of the parents.

UNIT VIII

Improving pre-school – Community linkages – Involving the community in planning, executing, monitoring and assessing the pre-school programme.

BLOCK - III: LINKAGES WITH NEARBY PRE-SCHOOLS

UNIT IX

Establishing linkages with nearby pre-schools – Peer supervision – Ways of obtaining services and financial assistance from the community.

UNIT X

The role of traditional and non-traditional media to reach the community – Folk media – Villupattu, street plays, oyilaattam, harikatha, puppet shows.

UNIT XI

Modern media – Mass media, radio, television, cinema, newspapers and magazines and posters – Their relative effectiveness in establishing the link.

BLOCK - IV: PLANNING AND ORGANIZING MEETINGS OF THE PRE-SCHOOL STAFF

UNIT XII

Planning and organizing meetings of the pre-school staff with the parents and the community – Identifying the community leaders.

UNIT XIII

Involving the village panchayat and local administration bodies in the development of the pre-school – Issues and agenda for discussion in these meetings.

UNIT XIV

Organizing festivals and celebration of important national days and religious festivals with the help of the community – The role of service organizations like Rotary Clubs, Lions Clubs and Jaycees, strengthening the pre-school-Involving the rural and urban disadvantaged groups and educating them about the philosophy of the pre-school.

REFERENCES

1. WaghAnutai, 'Parent and Community', ECEIM, 1979.
2. G. Pankajam, 'Pre-school Education: Philosophy and Practice', Gandhigram Rural University Press, 1991.
3. IAPE Conference reports on Parents and Community Links with Pre-Schools.
4. RajalakshmiMuralidharan and Uma Banerjee, 'A Guide for Nursery School Teachers', NCERT Publication.
5. Erickson H. Erick, 'Childhood and Society', Perguim Dorks Ltd., 1969.
6. Salach, Simcha, 'In First Person Plural', Bernard Van Leer Foundation, 1993.
7. Sarah HamondLeeper et-al, 'Good Schools for Young Children', The Macmillan Company, London, 1968.
8. Sylvia Krown, 'Threes and Fours Go to School', Prentice-Hall Inc., New Jersey.
9. Venna Hildebrand, 'Introduction to Early Childhood Education', Macmillan Publishing Co. Inc., New York.

Course Code	Title of the Course
31242	Educational and Instructional Technology for young children

BLOCK - I: EDUCATIONAL AND INSTRUCTIONAL TECHNOLOGY

Unit I

Educational and Instructional Technology – Meaning, Nature, Scope, Definition, Objectives and Significance -Educational Technology and Instructional Technology – Role and Recent Trends.

Unit II

Approaches of Educational Technology – Hardware, Software, System approach, Individual & Mass media approach.

Unit III

Differential Instruction, Universal Design of learning and Individualized Instruction- Implication of the above for inclusion.

Unit IV

ICT – Meaning, Definition, Scope and Significance- Psychological bases for ICT among teachers and learners-

BLOCK - II: DEVELOPMENT OF ICT

Unit V

Development of ICT – Stages, Requirement and Process -Use of ICT in developing collaborative networks for sharing and learning such as Internet – E-mail, Tele-teaching, Tele-conference to communicate with families and children in other places.

Unit VI

Technology Tools and Interactive Media-Use of ICT to simplify record keeping, information management in education administration in special and inclusive settings

Unit VII

Multi Media - Meaning, Nature, Scope, Definition and Approaches-Types of Instructional Aids: Projected & non-projected Aids, Projectors, Radio, Tape Recorder, Television, Films, Computers, whiteboard, Smart board, e-Flash Cards, Educational Toys

Unit VIII

Advantages, Limitations and Challenges of Using Multimedia in Education -Recent Trends in Multimedia -Implication of Multimedia in teaching learning.

BLOCK - III: DISABILITY FRIENDLY TECHNOLOGY

Unit IX

Enhancing Technology Friendly Practices among Teachers-Computer-Assisted & Computer Managed Instructions, Cybernetics, E- learning, Use of Net Search and Websites

Unit X

Disability Friendly Technology – Punarjani, and e-learning Framework developed by C-DAC - Developing Technology Integrated Lessons – Sharing e-books with Individual and Group.

Unit XI

Implications of Technology based instruction in Inclusion -digital storytelling with children- Co-create digital books with photos of the children's play or work- digital audio files with the child as the narrator.

BLOCK - IV: APPLICATION OF TECHNOLOGY

Unit XII

Application of Technology in Worksheet Preparation, Report writing and Evaluation.

Unit XIII

Application of Technology in Assistive Devices – For example, JAWS, Smart phones, Screen Readers

Unit XIV

Application of Technology in Instruction – Individual, small group and large group- Advantages, merits and demerits -Implications for inclusion

REFERENCES

1. Venna Hildebrand, 'Introduction to Early Childhood Education', Macmillan Publishing Co. Inc., New York.
2. Sarah HamondLeeper et-al, 'Good Schools for Young Children', The Macmillan Company, London, 1968.
3. Erickson H. Erick, 'Childhood and Society', Perguim Dorcs Ltd., 1969.
4. Brophy J E et-al, "Teaching in the Pre-school", Harper and Row, New York, 1975
5. GolbyGreenward and West, "Curriculum Design", ELBS, London, 1979.

Course Code	Title of the Course
31243	Practices of child Rearing

Objectives

On completion of this course, students will be able to

- Outline parenting styles/ roles and methods.
- Identify major theories related to various parenting styles
- Identify and describe the factors that influence parenting of a child with special need
- Analyze the social factors that promote the healthy growth and development of children with special needs from birth to adolescence.
- Analyze the types of structures of various organizations that can help in nurturing children with special needs
- Identify and access various support systems available to parents and families.
- Understand the Specific Needs and concerns of families having a child with disability
- Become aware of disabilities and their familial and societal contexts, including the disabling and enhancing environments impacting their quality of life.
- Counsel the family members and community regarding interventions with disabled people.

Outcomes of the Course

- The course will make the student aware about the Outline parenting styles/ roles and methods.
- The course will make the student to Identify major theories related to various parenting styles
- The course will make the student to Identify and describe the factors that influence parenting of a child with special need
- The course will make the student to analyze the social factors that promote the healthy growth and development of children with special needs from birth to adolescence.
- The course will make the student to Analyze the types of structures of various organizations that can help in nurturing children with special needs
- The course will make the student to Identify and access various support systems available to parents and families.
- The course will make the student to Understand the Specific Needs and concerns of families having a child with disability
- The course will make the student to become aware of disabilities and their familial and societal contexts, including the disabling and enhancing environments impacting their quality of life.
- The course will make the student to Counsel the family members and community regarding interventions with disabled people.

BLOCK - I: INTRODUCTION TO PARENT EDUCATION

UNIT -I

Introduction to Parent education: Need for Parenting Education - Concepts of Parenthood - Characteristics of Parenthood and Parent-Child Relations

UNIT II

Historical Perspective on Parenting - Variables Impacting Parenthood, Theories of Parenting. Qualities of good Parenting skills, parenting styles, parenting types

UNIT- III

Role of Culture and Tradition in Parenting: Contemporary Families - Features , Diversity . Family systems Theory - Systemic Family Development Theory - Common Developmental Process in Families - Family Ecology Theory (Bronfenbrenner) and Parenting.

UNIT IV

Erikson, Vygotsky, Piaget theory and their application to Parenting. Evolving Concepts of Parenthood: - Behaviour problems, transition to parenthood- adjusting to parenthood- parenting in Adoptive Family Systems. Stages of Parenting

BLOCK - II: PARENTING CHILDREN WITH SPECIAL NEEDS

UNIT V

Parenting Children with Special Needs- *Negative conditions* -Anxiety-Anger-Frustration-Guilt-Confusions –Powerlessness -Disappointment –Rejection, Role confusion, Superstition practices, Depressive moods -Working together with other professionals -Other professional involved with the care of the young child-Respecting professional roles-Skill transfer-Sharing information

UNIT VI

Parents as partners in rearing children with special needs --Respecting parent priorities- Active listening- Accommodating special circumstances-Single parent families-Working parents- Parents from minority communities-Parents with multiple responsibilities- Influence of family beliefs about parenting, child learning & impairment

UNIT VII

Challenges in rearing special needs children- emotional, physical exhaustion, stress, school related issues, financial constraints -family relationships. Different Concerns: Medical Issues, Behavior Issues, Developmental Issues, Learning Issues, Mental Health Issues, Common Concerns.

UNIT VIII

Impact of disability on persons with disability and their families: reactions of parents/family members, school and society and ways of coping. Needs and problems of persons with disability -and their families across the life span and at critical stages in their lives and social work intervention at each stage.

BLOCK - III: SPECIAL REQUIREMENTS OF SPECIAL CHILDREN

UNIT IX

Special requirements of families having children with special needs. Intervention - family crisis intervention, family centred intervention, parent guidance, parent training, support/self help groups of parents/siblings; community level –community awareness, education

UNIT X

Role of family and community in management of Children with Special Needs-Access Information and Services: Early interventions-Assessments, planning –Programming-Stimulation training -Treatments (Medicinal / Therapeutic rehabilitation)-Post evaluations

UNIT XI

Training: Daily living skill trainings-Home based training-Parent training -Inclusive development & education-Pre-vocational educations-Vocational skill training -Co-curricular activities-Post evaluations -Treatments (Medicinal / Therapeutic rehabilitation) -Orthotic & Prosthetic appliances - Surgical treatments

BLOCK - IV: STATE DISABILITY FORUMS

UNIT XII

Network: Care giving support - Parent’s association / Federations- Seek other parent’s support- Special school associations- Nutrition consultants- Pediatric, Psychiatric & Neurology practitioners- Speech therapist, Occupational therapist, Physiotherapist, Mobility Rehabilitation personnel- District / State Disability forums

UNIT XIII

Liaison -National / State level special Olympic federation- Special children sports academy – District / state- Children’s clubs- Welfare clubs - District Disabled Welfare Office (DDWO) & its services

UNIT XIV

NHFDC (National Handicapped Finance Development Corporation) & its services, Income tax exemption / redemption benefits , Benefits under PWD act / National trust for welfare of persons with Autism, CP, MR and Multiple Disability act / RCI act.

REFERENCES

1. Albrecht G.L, Katherine D Seelman. & Michael Bury, (2001). *Hand Book of Disability Studies*. Sage, London
2. Arcus, H.E. and Others (1993), *Handbook of Family Life Education: The Practice of family Life Education (Vol II)*, New York:
3. Bandarkar, P.L. and Wilkinson T.S. (2000): *Methodology and Techniques of Social research*, Himalaya Publishing House, Mumbai.
4. Bigner, Jerry . (2010, 8th edition). *Parent-child Relations*. Pearson Merrill Prentice Hall: Columbus Ohio.
5. Blau,D.M. (Ed)(1991) *Quality cost and parental choice of Child Care*. New York: Russel Sage
6. Carson, R.C., Butcher, J.N., & Mineka, S. (2007). *Abnormal Psychology and Modern Life* (11th Ed). New Delhi: Dorling Kindersley (India) Pvt. Ltd.

7. Hammer, Tommie J. & Turner, Pauline, H. (2001). *Parenting in Contemporary Society* 4th Ed. MA: Allyon& Bacon.
8. Heath, P. (2009). *Parent-child relations: Context, research, and application*. New York, NY : Pearson Education.
9. Hegarty Seamus & Mithu Alur, (2002). *Education and Children with Special Needs*. Sage, London
10. Judith Winter, (2006). *Breakthrough Parenting for Children with Special Needs*. Library of Congress Cataloguing. San Francisco, USA.
11. Karanth, Pratibha & Joe Rozario, (2003) *Learning Disability in India*. Sage, London
- Masud Hoghughi, (Ed). (2009). *Handbook of Parenting Theory and Research for Practice*. Sage Publications. New Delhi.
12. Moore, (2005). *Researching Disability Issues*. Open University Press, London.
- Pamela Bartram, (2007). *Understanding Your Young Child with Special Needs*. Jevince Kingsley: United Kingdom.
13. Panda, K.C. (2001). *The Education of the Exceptional Child*. New Delhi: Vikas Publications.

Course Code	Title of the Course
31244	Field Work Practicum IV

ANY 10

1. Home visits, interview and evaluation to know need base for programme planning.
2. Information gathering related to the Role of Culture and Tradition in Parenting Preparation of Charts and materials relating to disability prevention and rehabilitation.
3. Organization of parents programme on health, Hygiene and nutrition.
4. Organization of children's programme for parents.
5. To visit a special school and identify behavioral modification techniques used in teaching, learning and managing difficult behavior in children and prepare a report.
6. Case study of challenged children (any two categories).
7. Develop learning material to teach basic daily living skills for children with the help of ICT.
8. Creating 5 pamphlets to create awareness in the community on the rights of children.
9. Observation of play and interaction of 4 typically developing children from birth – 6 months, 6 months – 1 year, 1 year – 3 years, 3 years– 6 years
10. Planning and conducting activities for a child with special needs.
11. Visit to normal preschool with inclusive education training resources teacher for setting resources centre.

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Master of Social Work

Sl. No	Course Code	Title of the Course	CIA Max	ESE Max.	TOT Max	C Max.
FIRST YEAR						
I Semester						
1.	34911	Social Work Profession	25	75	100	4
2.	34912	Social Science for Social Works	25	75	100	4
3.	34913	Psychology of Social Works	25	75	100	4
4.	34914	Social Case Work	25	75	100	4
5.	34915	Field Work Practicum - 1	25	75	100	4
		Total	125	375	500	20
II Semester						
6.	34921	Social Group Work	25	75	100	4
7.	34922	Community Organization and Social Action	25	75	100	4
8.	34923	Social Work Research and Statistics	25	75	100	4
9.	34924	Social Welfare Administration and Legislations	25	75	100	4
10	34925	Field Work Practicum - II	25	75	100	4
		Total	125	375	500	20
SECOND YEAR						
III Semester						
11.	34931	Counseling : Theory and Practice	25	75	100	4
12.	34932	Human Resource Management	25	75	100	4
13.	34933	Specialization – 1*	25	75	100	4
14.	34934	Specialization – II*	25	75	100	4
15.	34935	Field Work Practicum - III	25	75	100	4
		Total	125	375	500	20
IV Semester						
16.	34941	Disaster Management	25	75	100	4
17.	34942	Corporate Social Responsibility	25	75	100	4
18.	34943	Specialization – III*	25	75	100	4
19.	34944	Field Work Practicum - IV	25	75	100	4
20.	34945	Research Project Report	25	75	100	4
		Total	125	375	500	20
		Grand Total	500	1500	2000	80

e. 2. Detailed Syllabi:

**SOCIAL WORK PROFESSION
FIRST SEMESTER**

Course Code	Title of the Course
34911	Social Work Profession

Objectives:

- To develop an insight into the historical context of origin and development of social work profession.
- To impart social and religious ideologies of India for ensuring change.
- To cultivate an understanding of the theoretical framework of the subject.
- To imbibe an idea about the social structure and social problems.
- To infuse a philosophical foundation and value base of social work profession.

Outcomes of the course:

- This course aims at introducing the learners to the critical enquiry of the history and ideologies concerning Social Work
- To help the learners to understand fundamental objectives of social work profession, its values, and ethics as linked to contemporary ideology for social change

Contents:

BLOCK I: Concept and Definition of Social Work, Historical Development of Social Work

Unit I

Social Work: Concept, Definition, Objectives, Principles and Philosophy.

Unit II

Key Concepts of Social Work: Social Service, Social welfare, Social Security, Social Defense, Social Justice, Social Legislation, Social Development, and Social Reform.

Unit III

Historical development of Social Work in United Kingdom, United States of America - Emergence of Functions and Scope of Social Work in India –

BLOCK II: Social Work as a Profession, Methods

Unit IV

Social Work as a Profession: Traits, Values, Ethics, Objectives, Goals, Nature, Scope, Philosophy, Principles and Functions.

Unit V

Social Work Education: as a Profession, Professional Values – Training; Skills, Tools and Techniques - Professional Social Work and Voluntary Social Work.

Unit VI

Methods of Social Work: Social Case work – Social Group Work – Community Organization – Social Work Research – Social Welfare Administration – Social Action.

BLOCK III: Reform Movement in India and Theories and Approaches of Social Work

Unit VII

Social Reform movements in India- Concepts, Definitions, Importance - Impacts and Role of Theosophical society, Bakhti movements, Dalit movements, Naxalbari movements and D.K. Movement. Major Contribution of Social Reformers: Buddha, Gurunanak, Iyyankali, Jothiba Phule, Swami Vivekananda, Raja Ram Mohan Roy, Gandhi, Dr. B.R.Ambedkar and E.V. Ramaswamy.

Unit VIII

Theories & Approaches: Role Theory, Problem Solving Theory, Gestalt Theory, Systems Theory, Ecological Theory, Communication Theory and Existential Approach.

Unit IX

Radical and Marxist perspectives of Social Work, Feminist Approach; Relevance and Scope of eclectic/integrated approach to social work practice

BLOCK IV: Models and Trends of Social Work Profession in India

Unit X

Models of Social Work: Relief model, Welfare model, Clinical model, Systems model, Radical model, Remedial model, Preventive model and Developmental model

Unit XI

Social Work Profession: Trends in Social Work Profession in India - Development of Social Work Education in India. Integrated perspectives of International Social Work – Global Perspective, Human Rights Perspective, Ecological Perspective, and Social Development Perspective.

BLOCK V: Field Work Training, Fields of Social Work and Social Work Association

Unit XII

Field Work Training: Importance of Field Work and Supervision for Trained Social Workers - Problems faced by the Social Work Trainees in field work agencies - Need for Social Science knowledge for Professional Social Workers.

Unit XIII

Fields of Social Work: Family and Child Welfare, Women Welfare, Youth Welfare, School Social Work - Community Development (Rural, Urban & Tribal), Dalit Welfare, - Medical and Psychiatric Social Work, Correctional Social Work Geriatric Social Work, Persons with Disabilities, Industrial Social Work and Human Resource Management.

Unit XIV

Professional Associations in Social Work: Needs and Importance - National and International Professional Organizations: NASW, IASW, IFSW, ASSWI, ISPSW, NAPSWI, And PSWA - Problems faced by social work professionals in India.

References:

- **Albrecht, Gary L.** Encyclopedia of Disability (4 Volumes), Sage, Oaks. 2006
- **Banks, Sara (1995)** Ethics and Values in Social Work: Practical Social Work Series,

Macmillan, London.

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- **Fried Lander, A.W.** Introduction to social work, Prentice Hall, New Jersey, 1974
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SOCIAL SCIENCE FOR SOCIAL WORKS

FIRST SEMESTER

Course Code	Title of the Course
34912	SOCIAL SCIENCE FOR SOCIAL WORKS

Objectives: To facilitate the students to learn the various aspects of Society, Socialization, Family, Social stratification and Social Problems

Learning Outcome: On successful completion of the course the students should enrich their knowledge about

- (i) The elements of Society,
- (ii) Socialization and Social groups.
- (iii) Marriage and Family System,
- (iv) Social stratification and Social Change, and
- (v) Social Problems with special reference to India.

Contents:

BLOCK I: Introduction of Social Thought and Sociological Theory

UNIT I

Introduction of Social Thought and Sociological Theory- Central Problems of Sociological Theory

UNIT II

Levels of Theorization in Sociology - Empirical Generalization - Middle Range Theories - Grand Theories - Theoretical Perspectives.

BLOCK II: Origin and Development of Functionalism

UNIT III

Origin and Development Functionalism.

UNIT IV

Analytical Functionalism: Talcott Parsons: Structure of Social Action.

UNIT V

Social System - Functional Pre-requisites - Pattern Variables.

UNIT VI

Empirical Functionalism: Robert K. Merton: Theory of Social Structure

UNIT VII

Manifest and Latent Functions. Reference Group - Relative Deprivation

UNIT VIII

Manifest and Latent Functions. Reference Group - Relative Deprivation

BLOCK III: Conflict and Dialectical Theory and Habermas Theory

UNIT IX

Conflict Theory: Marxism and Conflict Tradition - Simmel's Conflict Theory

UNIT X

Dialectical Conflict Theory of Dahrendorf- Conflict Functionalism: Social Functions of Conflict - Louis A. Coser.

UNIT XI

Habermas -Theory of Communicative Action-Public sphere -Life world L.Althusser - Structural Marxism -Epistemological break-Structural Causality-Structure of dominance

BLOCK IV: Symbolic Interactionism, Phenomenology and Ethnomethodology

UNIT XII

Symbolic Interactionism: Historical Background - C.H. Cooley - George H. Mead - Herbert Blumer.

UNIT XIII

Phenomenology and Ethnomethodology - A. Schutz, Peter Berger, Gluckmann and H. Garfinkel. Exchange Theory- Peter. M.Blau - Process of Exchange- Values, Norms- Social

BLOCK V: Exchange of Power

UNIT XIV

Exchange-Power - Study of Small Groups. George Homans: Elements of Behavior - The External System - Internal System -. Theory of Structuration., M. Facoult's Postmodernism- Derrida , Poststructurlism and Post – Post Marxist Theories.

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London: Heinemann, 1972.
- **Blumer, H.** – Symbolic Interactionism: Perspectives and Methods. New Jersey: Prentice-Hall, 1969.
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- **Turner, J.H., Beeghly, L., & Powers, C.H.** – The emergence
of Sociological Theory.

PSYCHOLOGY FOR SOCIAL WORKS

FIRST SEMESTER

Course Code	Title of the Course
34913	PSYCHOLOGY OF SOCIAL WORKS

Objectives:

- Develop an overall understanding of the principles of growth, their relevance, and application to behaviour at various phases in life.
- To understand the role of hereditary and environmental influences in growth and development.
- To understand interactional nature of growth and behaviour at various stages in life: infancy, childhood, adolescence, youth, adulthood, and old age.
- To develop sensitivity towards needs, developmental tasks, and health status along with the need for developmental programmes for the same.
- To apply the information on growth, development and health in social work practice in general and individuals, groups, and communities in particular.

Outcome of the course

- This course aims to introduce learners to the development of the individual across the life span with an ecological perspective.
- It also provides an them with an understanding human development and behaviour besides theoretical inputs.

Contents:

BLOCK I: Psychology: Definition, Concepts Recent Trends, Evolution of Human Life

Unit I

Psychology: definition, nature and scope – Concept of human behavior – Normality and Abnormality - application in various fields - introduction to schools of psychology: Structuralism, Functionalism, and Gestalt

Unit II

Recent trends: 1. Biological, 2. Psychodynamics, 3. Cognitive, 4. Behavioral, 5. Humanistic

Unit III

Evolution of human life: Conception – Stages of Prenatal development a) Period of Ovum b) Period of embryo c) Period of Fetus –Birth and its types - Pre and Post natal care.

BLOCK II: Human Growth and Development Concept and Stages, Learning

Unit IV

Human growth and development: Concept, meaning, nature and importance – developmental task, hazardous, physical, social, emotional, and cognitive development - Physical and Psychological aspects of various stages - Stages of development: pregnancy and child birth - infancy – babyhood – childhood – puberty - adolescent – adulthood – middle age – old age.

Unit V

Learning: Concept, nature, definition – types of learning: Cognitive, Sensory, Motion and Verbal learning - Theories: a) Trial and error, b) Classical conditioning, c) Operant conditioning, d) Insightful – Transfer of learning - Approches of Pavlov and Skinner - remembering and forgetting

BLOCK III: Motivation, Adjustment and Perception

Unit VI

Motivation: concept, meaning, definition, - motives for survival – Human needs and motivation - types and characteristics of motives - Interaction of motivation – social motives – theories of motivation: a) Instinct, b) Drive reduction, c) Arousal, d) Incentive, e) Cognitive, f) Maslow's Hierarchy - conscious and unconscious motivation.

Unit VII

Adjustment: concepts of adjustment and maladjustment - stress; frustration; conflict - nature and types - Coping mechanisms: nature and types - mental health and community mental health.

Unit VIII

Perception: Concept, Definition, characteristics and Nature, Types – perceptual processes - errors in perception - perception space, depth perception, motion perception, auditory, and visual attention – perception illusion – subliminal perception and extra sensory perception - factors influencing perception.

BLOCK IV: Attitude, Intelligence and Stress

Unit IX

Attitude: concept and nature of attitudes, stereotypes, and prejudices – components of attitude and their consistency - formation of attitudes – process of attitude change in individuals and groups – collective / crowd behavior, adjustment.

Unit X

Intelligence: Definition - Theories of intelligence: a) Unitary, b) Multi-factor, c) Two factor, d) Group factor, e) Hierarchical – Types of intelligence - Measurement of intelligence – Classification of I.Q – Mentally retarded.

Unit XI

Stress: Meaning, Causes and Effects - Conflict: Meaning, Types, Coping drives, Factors influencing stress - Stress reduction strategies - Defense mechanism - A brief idea on major psychiatric illness - Mental Illness / Health: Concept and Definition, Types - Significance of mental health - Mental retardation.

BLOCK V: Personality, Social Psychology and Application of Psychology for Social Works

Unit XII

Personality: definition, structure, nature, characteristics and theories of personality - Trait and type of theories – A brief overview of psychodynamic and humanistic theories - important concepts of the contributions of Freud, Jung, Adler, Maslow, and Ericson - factors influencing personality development – influence of heredity and environment – emotions – development of emotions – individual and group emotions - socialization process.

Unit XIII

Social Psychology and its applications: Collective behavior - nature and reasons for collective behavior - manifestations of collective behavior.

Unit XIV

Application of Psychology for Social Workers - Role of Social Workers in promoting Mental Health – importance and Demands for psychiatric social workers.

References:

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SOCIAL CASE WORK

FIRST SEMESTER

Course Code	Title of the Course
34914	SOCIAL CASE WORK

Objectives:

- To understand case work as method of Social Work and to understand values and principles of working with individuals and families.
- To develop the ability to critically analyse problems of individuals and families and factors affecting them.
- To enhance the understanding of the basic concepts, tools, and techniques in working with individuals and families in problem solving and in developmental work.
- Develop appropriate skills and attitudes to work with individuals and families.
- Develop the ability to reflect on „self“ as person and grow as a professional social worker

Outcome of the Course

- This course aims to develop simple to complex skills of working with individuals and families in various situations (like crisis, preventive, and developmental) and settings.

Contents:

BLOCK I: Social Case Work: Definition and Concept, Nature and Scope

Unit I

Social Case Work: Concepts, Definition, meaning, Objectives, Purpose, Importance, Nature and Scope - Historical development – components of social case work: person, problem, place, and process - values and principles of case work practice.

Unit II

Socio-cultural factors affecting the case work practice in India - Skills of Social Case Worker - Impact of Social, Cultural factors on individual and families - relationship with other methods of social work - skills in social case work practice

BLOCK II: Case Work Process and Evaluation Tools and Techniques of Social Case Work

Unit III

Case work process: Intake: meaning, steps, referral- types, and stages. Study: Meaning, tools used/procedure followed in the study process: interviewing: types, purpose, skills, techniques, and principles of interviewing; home visits & reaching out, collateral contacts & relationship. Assessment: Social Diagnosis: meaning, types, and models. Treatment/Intervention: meaning, objectives, goals and goals setting & treatment planning, principles, models, types, and techniques (supportive/environmental manipulation, reflective/ practical help or material

help & direct treatment/ counseling).

Unit IV

Evaluation: meaning, purpose/objectives, types, methods/techniques/instruments, difference between appraisal, monitoring, and evaluation; Termination: meaning, reaction to termination, decision to terminate, and planning for termination. Follow-up- meaning, purpose, and types.

Unit V

Tools of techniques of social case work: interview, observation, home visits and collateral contacts – social case work intervention: direct and indirect multi-dimensional intervention

BLOCK III: Case Worker – Client Relationship and Case Work and Communication

Unit VI

Case Worker-Client Relationship: meaning, purpose, needs, significance, and elements, components - characteristics of professional relationship: empathy, transference and counter transference, resistance, sustaining the relationship, non-possessive warmth, genuineness and self-disclosure - principles of client-worker relationship; obstacles in client worker relationship.

Unit VII

Case Work and Communication: meaning, purpose, importance, principles, elements in communication process - types, importance of listening, observing and feedback, communication barriers and ways to overcome them - importance of interpersonal communication in case work.

BLOCK IV: Approaches and Theories to Practice, Recording and Application of Social Case Work

Unit VIII

Approaches and theories to Practice: psychosocial approach, functional approach, diagnostic approach, problem solving model, crisis intervention; behavior modification, functional and development of an eclectic model for practice. Family therapy and counseling in the Indian context: similarities and differences.

Unit IX

Recording in Case Work: meaning, sources and types - process record- person oriented and problem oriented records and its components - summative record, etc - principles of recording – needs and importance of recording - uses and maintenance of record.

Unit X

Application of Social Case Work in different settings and Clientele groups: medical and psychiatric settings- mentally retarded shelter homes - mental rehabilitation center - de-addiction and detoxification centers - mental health and community based rehabilitation - role of social workers in hospital settings

BLOCK V: Social Case Work with Various Settings and Role of Social Case Work and Research in Social Case Work

Unit XI

Social case work with Family and child welfare settings: family, child guidance clinic,

schools, geriatric care of aged and the terminally ill – foster home

Unit XII

Case work practice in community settings: self-help groups, schools, industries and correctional institutions

Unit XIII

Role of case worker in various settings: enabler, facilitator, guide, resource mobilize - use of professional self - conflict and dilemmas in working with individuals and family - Problems and limitations of social case worker in different settings.

Unit XIV

Practice and Research in Social Case Work - Use of Single case evaluation and Ethnography as Research methods in Social Case Work.

References:

- **Hollis, Florence.** *Casework: A psychological therapy.* New York: Random House, 1964.
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FIELD WORK PRACTICUM -

1 FIRST SEMESTER

Course Code	Title of the Course
34915	FIELD WORK PRACTICUM - I

Specific Objectives: On successful completion of the course the students should enrich their knowledge regarding the

- Understanding the concepts related to working with Communities and processes involved in it.
- To familiarize the emerging trends and experiments in Community Organization
- To introduce various aspects of Social Action as an effective method of Social Work.

Learning Outcome: To facilitate the students to learn about different dimensions of Community Organization and Social Action and its importance in Social Work.

Social work practice is designed to provide a variety of opportunities to develop and enhance professional practice skills through, orientation, observation visits, rural/tribal camps, etc.

Orientation: A detailed instruction about field work, objectives importance of field work. Orientation provides information regarding: (1) the importance and place of the practice in the social work education and (2) the purpose, functions, and ethics in professional practice

Observation Visits:

The purpose of the observation visits is to acquire skills of systematic observation and to develop a spirit of inquiry; to understand society's response to social problems through various services, understand and appreciate, to develop the ability to critically evaluate the initiative of voluntary and government programmes, and to develop an appreciation of social work intervention in these programmes.

A minimum of 5 visits to different social agencies with at least two settings pertaining to each field of specialisation.

Suggested field:

Health Setting: Hospitals, de addiction centres, community health extension projects, district mental health programmer /projects, etc

Educational Setting: Formal schools, non formal / adult education centres, etc.

Community Services: Community projects, self help groups, successful youth clubs and mahalir mantrams, environment groups, skill development centres, etc.

Services for special groups: like differently abled, destitute, elderly- both institutional and non institutional

Criminal Justice system: observation homes, jails, etc.

Civic Administration Centres-: municipal, panchayat union, panchayat etc.

a) **Services learning Project :** on social issues / problems – Minimum of 10 days to be allotted for this purpose. A minimum of two programmes should be organised by the group. One programme must be rural based. Suggested themes such as anti – dowry campaign, HIV/AIDS awareness, gender sensitisation, alcoholism, and drug awareness, etc. could be considered.

NORMS FOR SOCIAL WORK PRACTICUM

I Semester Field Work:

Field work orientation and agency visits- a minimum of 10 visits to different social agencies with at least two settings pertaining to each field of specialisation. – 10 marks.

Evaluation : Total Marks – 100

Internal Evaluation - 25

marks

A. Filed Orientation visits (10marks)

- | | | |
|---------------------------------|---|---------|
| (i) Observational Skills | - | 5 marks |
| (ii) Reporting | - | 5 marks |
| (iii) Attendance for field work | - | 5marks |

Total 15 marks

Self Learning Project (10 marks)

- | | | |
|------------------------------------|---|---------|
| (i) Organising Ability & Team Work | - | 5 marks |
|------------------------------------|---|---------|

(ii) Resource Mobilisation and Social Relevance - 5 marks

10 marks

External Evaluation – (75 marks)

External examiner to be appointed by the University as is for project. One examiner may be appointed for every 15 students

Break up of marks is as follows:

- | | | |
|-----------------------------------|---|----------|
| 1. Theoretical Knowledge | – | 15 marks |
| 2. Practical Skills | - | 15 marks |
| 3. Mobilizing resources | - | 15 marks |
| 4. Communication and Presentation | – | 15 marks |
| 5. Reporting | - | 15 marks |

75 marks

SOCIAL GROUP WORK

SECOND SEMESTER

Course Code	Title of the Course
34921	SOCIAL GROUP WORK

Objectives:

- Appreciate the importance of groups in the life of an individual and develop awareness about the specific characteristics of group work and its contributions as a method of social work intervention.
- To gain knowledge about group formation and use of a variety of group approaches and to understand concepts, dynamics, and models.
- To develop knowledge of the principles, skills, and techniques to be used by the social worker in group.
- To develop a beginning awareness of the various programme media and skills of programme planning.
- To identify the various situations and settings where the method could be used in the context of social realities of the country.

Outcome of the course

- This course aims at developing the understanding of group work as a method, developing skills for intervention and gaining knowledge of the scope of this method in various settings

Contents

BLOCK I: Social Group Work: Concept and Definition, Phases of Group Information

Unit I

Social group: concept, definition, meaning, objectives, purpose, characteristics, nature and scope - types of groups-social group and social group work group - functions of a group.

Unit II

Phases of group formation: forming, storming, norming, performing, adjourning, mourning/grieving - basic human needs met by groups at different stages of group development - group goals.

BLOCK II: Group Process and Introduction to Social Group Work

Unit III

Group process: bond, acceptance, isolation and rejection - sub-group formation - newcomers in the group, expectation, withdrawal, behavior contagion, conflict and control - classification of group process: basic, structural, locomotive, and molar - Group dynamics: meaning, definition, functions, and basic assumptions of group dynamics.

Unit IV

Social group work: concepts, definition, assumptions, purpose, goals, principles, and values of group work - historical development of group work - group work as a method of social work – group work relation to other methods of social work.

BLOCK III: Group Work Process, Assessment, Intervention, Supervision

Unit V

Group work process: Intake and study - selection of members, composing group, orienting the members, preparing the environment, goal setting, motivation, use of home visits, and collateral contacts.

Unit VI

Assessment: preparing for group work, first meetings – interviewing - ground rules for group work meetings - group roles and responsibilities - group meetings,

Unit VII

Intervention/treatment: problem identification - making them work - dealing with difficulties within the group - group presentations - group work evaluation- meaning and its place in group work - Evaluation: steps in group work evaluation - criteria for good group work - checklist for group work evaluation- Termination - reaction to termination - Follow up.

Unit VIII

Group work supervision: concepts, need, tasks, types, purpose, and functions, techniques - conditions for good supervision.

BLOCK IV: Leadership in Group, Models and Approaches and Group Work Recording

Unit IX

Leadership in group: concepts, definition, characteristics, functions, qualities of leader - types and theories of leadership - training for leadership - sociometry and sociogram - Group work

for team building: meaning, purpose, situational leadership in team building

Unit X

Models and approaches: social goal model, remedial and reciprocal model - group therapy - group psychotherapy - therapeutic - social treatment - development group - task- oriented group, etc.

Unit XI

Group work recording: meaning, purpose, types - principles of group work recording - scope, problems, and limitations of group work practice in Indian settings - role of group worker in various settings.

BLOCK V: Programme Planning, Programme Laboratory Group Work Settings and Practice

Unit XII

Programme planning: meaning and definition of programme - principles and process of programme planning - place of agency in programme planning.

Unit XIII

Programme laboratory- values and techniques: games, singing, dancing, dramatics, street play, puppetry, group discussions, parties, excursion, psychodrama, socio-drama, role

play, brain storming, camping- planning and conducting camps - stages of group development - use of programme for group development: orientation stage, working stage, termination stage, programme planning, implementation, and evaluation

Unit XIV

Group work settings and practice: application of group work method in different settings; community settings - medical and psychiatric settings: hospitals, de-addiction, physical and visual and mentally challenged - family and child welfare settings - the aged homes, schools, correctional institutions, and industries - skills of a group worker.

References:

- **Alissi, Albert S.** "Social group work: Commitments and perspectives." *Perspectives on social group work practice* (1980): 5-35.
- **Conyne, R. K.** (1999). *Failures in group work: How we can learn from our mistakes.* Chronicle Books.
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COMMUNITY ORGANISATION AND SOCIAL ACTION

SECOND SEMESTER

Course Code	Title of the Course
34922	COMMUNITY ORGANISATION AND SOCIAL ACTION

Introduction:

Community organization as method of social work practice is seen as a means to facilitate communities towards self-directed change. It takes as its basis, the inequalities in society manifested through processes of marginalization, discrimination or disempowerment of groups, which have resulted in the loss control over resources, be they tangible or intangible. The strategies of CO practice being addressed as part of the course covers a range of different ideologies, from those people initiated and those that are initiated by the elite. CO is seen as a means as well as an end, where collective process sustains the community's capacity to bring about change.

Objectives:

- To understand the different aspects of a community, its functions, and problems
- To understand the critical elements of community organization process
- To enhance the critical understanding of models and strategies for CO
- To develop attitudes conducive to participatory activities for a civil society
- To gain knowledge on the various techniques and skills of community organization & social action and to develop the basic skills to apply for those in the community.

Contents:

BLOCK I: Community, Community Dynamics and Community Leadership: Concept and Definition

Unit I

Community: concept, definition, meaning, types, and characteristics - community power - structure - minority groups.

Unit II

Community dynamics: integrative and disintegrative processes in the community.

Unit III

Leadership: definitions, characteristics, types and qualities - leadership in different types of

communities - theories of leadership – symbols, rituals, apathy, prejudice and individual predisposition - community power structure and political organizations in the community - factions and sub-groups - minority groups.

BLOCK II: Community Organisation, Community Participation and Models of Community Organisation

Unit IV

Community Organization: concept, definition, objectives, philosophy, approaches, principles and skills - community organization as method of social work - community welfare councils and community chests - **models** of community organization

Unit V

Community participation: concept, imperatives, types, constraints, methods and techniques; components of community work and community relation.

Unit VI

Methods of community organization: Planning, education, communication, community participation, collective decision making, involvement of groups and organizations, resource mobilization, community action, legislative and non-legislative promotion, co- ordination - community organization as an approach to community development.

BLOCK III: Phases of Community Organisation, Intervention and Application of Community Settings

Unit VII

Phases of community organization: study, assessment, discussion, organization, action, evaluation, modification, continuation and community study

Unit VIII

Intervention strategies in community settings: awareness building, organizing, activating, people's participation, negotiating, lobbying, and resource mobilization, resolving group conflicts, programme planning and service delivery, developing human resource, and monitoring and evaluation

BLOCK IV: Social Action: Definition, Concept and Strategies

Unit IX

Application of community organization in different settings: rural, urban, tribal - target groups: children, youth, women, aged, Dalits - community organization in emergencies: fire, flood, drought, famine, earthquake, and war - community organization at local, state, and

national level.

Unit X

Roles of the Community Organizer: Models of Community Organization as practiced – Local department, Social Planning, Social Action and Community Liason – Methods and skills in Community Organization – Use of Social Work methods in Community Organization.

Unit XI

Social Action: Concept, meaning, definition, objectives, characteristics, principles, methods and techniques - social action as a method of social work - social action and social reform - scope of social action in India - enforcement of social legislation through social action. Approaches: rights based approach - advocacy based approach

Unit XII

Strategies: preparation of carefully worded statement of policies - preparation of carefully analysis of pending legislations - individual consultation with key legislators on the implication of pending measures - persuasion of influential organization to support or oppose pending legislation - creation of ad hoc citizens committee composed of people of great influence or prestige.

BLOCK V: Radical Social Work and Applications of Community Organisation

Unit XIII

Radical Social Work: meaning, techniques - role of Paulo Freire and Saul Alinsky, Marx, Gandhi, Jayaprakash Narayan, and Vinoba Bhave - community organization as a Para-political process and role of social worker in community organization and social action.

Unit XIV

Application of Community Organization in different fields: Health, Correctional, Educational, Rural and Urban, Industrial, Community Welfare Councils and Community Chest - Strategies of community organization: Advocacy, Campaigning, Lobbying and Networking

References:

- **Biklen, Douglas.** *Community organizing: Theory and practice.* Prentice Hall, 1983.
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SOCIAL WORK RESEARCH AND STATISTICS

SECOND SEMESTER

Course Code	Title of the Course
34923	SOCIAL WORK RESEARCH AND STATISTICS

Objectives:

- Develop an understanding of scientific approach to human enquiry in comparison to the native or common sense approach in various aspects and its process.
- To understand major research strategies, meaning, scope, and importance of social work research.
- To develop an ability to see the linkage between the practice, research, theory, and their role in enriching one another.
- To develop attitudes favorable to the judicious integration practice, research and theory, and to develop skills for the use of library and documentation services for research.
- To develop the ability to conceptualize, formulate, and conduct simple research projects

(includes basic research skills such as conceptualization of a research strategy and problem, writing a research proposal, developing tools for collecting data, use of sampling strategies, data collection methods, processing, presentation, analysis interpretation, writing research report, etc.).

Outcome of the course

- This course will equip learners to utilize and conduct research as service managers to improve services, evaluate and develop new services,
- To develop intervention methods, strategies, techniques, and also to be an active consumer of other research.

Contents:

BLOCK I: Introduction to Research and Social Work Research, Scientific Method and Research Approaches

UNIT I

Research: concept, objectives, characteristics, ethics, and qualities of good researcher; social research: meaning and objectives; social work research: meaning, scope, importance, limitations in social work research, and difference between social research and social work

research;

UNIT II

Scientific method: meaning, characteristics, and process of scientific inquiry; relationship between theory method & fact; types of research: pure, applied, and action research; participatory and evaluation research;

UNIT III

Research approaches: qualitative research: meaning, scope, characteristics, strategies, sampling and design, types of qualitative research: ethnography, focus group discussion, life history and content analysis; use, limitations, and obstacles in qualitative research, quantitative research: meaning, type, difference between qualitative and quantitative research.

BLOCK II: Selection of the Problem, Theory and Hypothesis

UNIT IV

Selection of problem: criteria and sources; surveying the field; literature review and developing the bibliography: purpose; using library and internet, library ethics, abstracting and plagiarism; defining the problem: need and significance of the problem; basic research questions: meaning and importance; research objectives;

UNIT V

Theory: meaning and use; inductive and deductive theory construction; concepts, indicators, and variables: meaning; types of variables; formal and operational definitions; measurement: meaning, levels of measurement; nominal ordinal, interval, and ratio

UNIT VI

Hypothesis: meaning, sources, characteristics, functions and types; assumptions and limitations; attributes of a sound hypothesis; hypothesis testing; level of significance; critical region; Type-I and Type-II errors.

BLOCK III: Research Design, Tools and Methods of Research

UNIT VII

Research design: meaning and types- exploratory, descriptive, diagnostic, experimental, and single subject research designs; universe and sampling: meaning, need, principles, types and techniques, and advantages and disadvantages;

UNIT VIII

Tools/instrument: steps involved in tool construction; validity and reliability: meaning and types; use of scales (developed by WHO/ILO, etc.), scaling procedures (Thurston, likert, bogardus, and semantic differentials): interview guide, code book, pilot study, and pre-test; sources of data: primary and secondary data.

UNIT IX

Methods: quantitative- interview- meaning and types; questioners: meaning and types; participatory and rapid appraisal techniques; qualitative- in-depth interview, observation and types and document review; mixed and multi method & triangulation;

BLOCK IV: Data Processing, Report Writing in Research

UNIT X

Data processing; transcription, data processing; presentation of data: tabular and graphical presentation; data analysis: univariate, bivariate, and multivariate analysis; interpretation: meaning, techniques, and precautions;

UNIT XI

Report writing: content and format; mechanics of writing research reports and precautions; research abstracts; footnotes, referencing, and bibliography: meaning and differences; methods of referencing; preparation of research project proposal; agencies involved in social work research.

BLOCK V: Statistics, Dispersion and Computer Applications

UNIT XII

Statistics- meaning, use, and its limitations in social work research; measures of central tendency: arithmetic mean, median, and mode

UNIT XIII

Dispersion: range, quartile deviation, standard deviation and co-efficient of variation; tests of significance: “t” test, f test and chi-square test; correlation: meaning, types, and uses; Karl Pearson’s coefficient of correlation and rank correlation;

UNIT XIV

Computer applications: use and application of computer in social work research with special reference to excel, etc.

References:

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- **Baker, Therese L., and Allen J. Risley.** "Doing social research." (1994).
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SECOND SEMESTER

Course Code	Title of the Course
34924	SOCIAL WELFARE ADMINISTRATION AND LEGISLATIONS

Objectives:

- To acquire knowledge of the basic process of registering, managing, and administrating welfare agencies in the context of social work profession.
- To acquire skills to participate in management, administrative process, and programme delivery.
- To develop the ability to see the relationship between policy and programmes and to analyze the process as applied in specific settings and specific programmes.
- To gain knowledge on policy analysis and policy formulations and to study social policies, plans, legislations and programmes so as to be able to interpret, enforce, and challenge them.
- To understand critically the concept and content/indicators of social development

Outcome of the course

- This course aims at helping the learner to understand management process and developing administrative skills and also to understand the learners to how policy is a link between constitutional principles and legislative actions and to understand the concept of social development.

Contents:

BLOCK I: Social Welfare Administration: Meaning and Definition; Purpose, Social Welfare Programme and Agency

UNIT I

Social Welfare Administration: meaning and definition of social welfare administration and social work administration; purpose, historical development; principles, functions, and areas (policy making, planning, personnel, supervision, office administration, budgeting, finance, fund raising, accounting, auditing, purchase and stock keeping, record maintenance, co-ordination,

UNIT II

Public relation, monitoring and evaluation, and research, annual report); social welfare administration at national, state, and local levels; CSWB (Central Social Welfare Board), state social welfare board, directorate of social welfare, and handicapped welfare.

UNIT III

Social Welfare Programme and Agencies: evaluation of social welfare in India; voluntary

social work, social agencies: meaning, definition, type and models of NGO's; roles of NGO's in national development; governmental schemes on social welfare;

BLOCK II: Agency Registration, Social Policy and Programmes

UNIT IV

Agency registration: methods, advantages, preparation of byelaws, memorandum of association, rules, regulation, and registration procedures.

UNIT V

Registration of societies and trusts: governing board, committees. Executives; qualities, functions, and role.

UNIT VI

Social Policy: definition, need, evolution and constitutional base; sources and instrument of social policy,

UNIT VII

Social policies regarding Other Backward Castes (OBCs), Scheduled Castes (SCs), Scheduled Tribes (STs), and de-notified communities;

UNIT VIII

Social policies and programmes for women, children, aged, and handicapped; development and implementation of programmes for weaker sections.

BLOCK III: Social Legislation: Definition and Concept

UNIT IX

Social Legislation: Definition, its roles as an instrument of social change,

UNIT X

Constitutional basis for social legislation: Fundamental Rights and Directive Principles of state Policy

BLOCK IV: Laws Related to Marriage, Divorces

UNIT XI

Laws Related to Marriage: Hindu, Muslim, Christian, and personal laws relating to marriage

UNIT XII

Laws relating to divorce, minority, and guardianship; adoption, succession, and inheritance

BLOCK V: Laws Related to Social Problems and Child Labour

UNIT XIII

Legislation relating to social problems such as prostitution, juvenile delinquency, women harassment

UNIT XIV

Legislation relating to child labour, untouchability, physical, and mental disabilities.

References:

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Dubey, Sumati Narain. *Administration of social welfare programmes in India.* No. 27. Bombay: Somaiya Publications, 1973.

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Jacob, K. K. *Social policy in India.* Himanshu Publications, 1989.

Jagadeesan, P. *Marriage and Social Legislations in Tamil Nadu.* Elatchiappenn Publications, 1990.

Shanmugavelayutham, K. "Social Legislation and Social Change." (1998).

FIELD WORK PRACTICUM

SECOND SEMESTER

Course Code	Title of the Course
34925	FIELD WORK PRACTICUM - II

Specific Objectives: On successful completion of the course the students should enrich their knowledge regarding the

- Understanding the concepts related to working with Communities and processes involved in it.
- To familiarize the emerging trends and experiments in Community Organization
- To introduce various aspects of Social Action as an effective method of Social Work.

Learning Outcome:

- To facilitate the students to learn about different dimensions of Community Organization and Social Action and its importance in Social Work.
- Concurrent field work is an ongoing learning practice and an opportunity to develop interventions skills in real life situations.
- Concurrent field work - agency placement in generic setting of practice such as schools/old age homes/counselling centres/rehabilitation settings, etc. to initiate and participate in direct delivery
- The placement will be for a minimum duration of 15 Field Work days for 2 days per week/semester.
- Importance to be given for the practice of Social Work methods. Each student is expected to conduct case work with a minimum of 3 clients, group work with at least 2 groups, and organize one community based programme.

Norms for Evaluation

Evaluation: Internal - **25 marks**

1. Case Work Practice - 5 marks

2. Group Work - 5 marks

- 3. Community Programme - 5 marks
- 4. Reporting - 5 marks
- 5. Attendance for field work - 5 marks

25 marks

External (75 marks)

- 1. Theoretical Knowledge - 30marks
- 2. Practice Skills - 25 marks
- 3. Mobilizing Resources - 10marks
- 4. Communication and Presentation - 10 marks

75 marks

THIRD SEMESTER

Course Code	Title of the Course
34931	COUNSELING: Theory and Practice

Objectives:

- To develop a holistic understanding of counseling as a tool for help.
- To acquire knowledge of various approaches, their theoretical under-pinning for goals, values, processes, and techniques.
- To develop skills of application to real life situations.
- To develop the ability to recognize and synthesize attitudes and values that enhances investment of self in the counselor's role.
- To develop the ability to use the tools/scales in various settings.

Outcome of the course

- Counseling help is called upon in developmental, preventive, facilitative, and crisis situations throughout the life span during different phase/stages and various life events.
- The courses aim to equip learners with skills of counseling and understanding of various approaches in various settings.

Contents:

BLOCK I:INTRODUCTION TO COUNSELLING: EVOLUTION, PHILOSOPHY AND PSYCHOLOGICAL, BASIC PRINCIPLES OF COUNSELLING

Unit I

Counseling: Meaning, Definition, Characteristics, Goals, Need and Importance of counseling
- Evolution of Counseling: 1. Philosophical foundation: Dignity of Human person. 2. Sociological foundation: Influence of Social System. 3. Psychological foundation: Concept of self, goal directed behavior, learning principles, development need at different stages - professional counseling – essential elements in counseling – guidance: meaning, objectives and importance.

Unit II

Basic principles of counseling: participation, individualization, confidentiality, communication, acceptance, self confidence, self awareness - other principles governing the counseling relationship.

BLOCK II: THEORITICAL FOUNDATIONS AND COUNSELLING PROCESS AND RELATIONSHIP

Unit III

Theoretical foundations of counseling: Psychoanalytic theory: psychoanalysis and transactional analysis - adlerian theory: Adlerian counseling – Humanistic theories: client centered counseling, existential counseling, gestalt therapy - behavioral theory: behavior therapy – cognitive theory: Rational Emotive Behavioral Therapy (REBT), reality therapy (RT), cognitive behavioral therapy (CBT), and eclectic theories.

Unit IV

Counseling process: Interview and its significance in counseling – use of observation in counseling - understanding of emotions in counseling.

Unit V

Counseling Relationship: Regard, Respect, Authenticity, Empathy and Genuineness - Counseling Process: Initiating Counseling - Attending Skills: Non-Verbal - Interacting with Clients – Termination - Follow-up - Transference and Counter-Transference - Counseling Techniques: Listening, Responding, Goal setting, Exploration, Summarization and Action.

BLOCK III: TYPES OF COUNSELLING AND INDIVIDUAL AND FAMILY COUNSELLING

Unit VI

Types of counseling: individual and group counseling - family counseling - marital counseling - student counseling - industrial counseling.

Unit VII

Individual and Family Counseling - Individual counseling - Stages: Stage 1: Problem Concern, Stage 2: Relationship to Counselor, Stage 3: Motivation, Stage 4: Conceptualizing the Problem, Stage 5: Exploration of resolution strategies, Stage 6: Selection of a strategy, Stage 7: Implementation, Stage 8: Evaluation and Termination - Family Counseling: Pre-marital and marital counseling.

BLOCK IV: GROUP COUNSELING, COUNSELING IN GROUPS AND DIFFERENT SETTINGS GROUPS IN COUNSELING AND TECHNIQUES

Unit VIII

Group Counseling: Definition, Ethical behavior with groups - forming a group - composition of group - frequency and duration of sessions - co-leaders - screening group members - Group Stages: 1. Initial exploration, stage: 2. Transition, resistance and conflicts, stage: 3. Working,

Cohesiveness and productivity, stage: 4. Consultation and termination.

Unit IX

Counseling in Groups and Different settings Groups in Counseling: T- Groups, Encounter Groups, Support Groups, Psycho Educational Groups and Psycho Therapy Groups –

Unit X

Techniques of group counseling - strategies and structure – barriers to effective counseling sessions - counseling evaluation – various influences on counseling

BLOCK V: COMPONENTS OF EFFECTIVE COUNSELING, STANDARDIZED TESTS IN COUNSELING SETTINGS, SPECIAL SITUATIONS AND COUNSELING AS A PROFESSION

Unit XI

Components of effective counseling: counselor's skills – qualities of an effective counselor – characteristics of clients – voluntary and non-voluntary client - Role and functions of the counselors in schools, industries, family, hospital and rehabilitation institution.

Unit XII

Standardized tests in counseling settings: Personality, intelligence, interpersonal relations, stress, anger, self esteem, anxiety, assertiveness, depression, adjustment, and mental health

Unit XIII

Counseling in Special Situations: Marriage, Couple and Family Counseling - School Counseling and Guidance - Career Counseling with Adolescents - Industrial Counseling with Employers and Employees - Alcoholic and De-Addiction Counseling - Crisis and Trauma Counseling - Supportive Counseling with PLHIV, TB patients, PWDs - Infertility counseling - Sex counseling - Bereavement Counseling - Counseling against suicidal thoughts - Community Counseling.

Unit XIV

Counseling as a Profession: Counselor as Professional - Ethical standards in Counseling; Research - Relevance of counseling as a Social Work Practice - Role of Professional Social Worker in counseling field - FCC in Counseling Profession - Dos and Don'ts in counseling.

References:

- **Feltham, Colin, ed.** *Controversies in psychotherapy and counselling*. Sage, 1999.
- **Fullmer, Daniel W., and Harold Wright Bernard.** *Counseling: Content and process*. Science Research Associates, 1964.
- **Geldard, Kathryn, David Geldard, and Rebecca Yin Foo.** *Counselling children: A practical introduction*. Sage, 2013.
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HUMAN RESOURCES MANAGEMENT

THIRD SEMESTER

Course Code	Title of the Course
34932	HUMAN RESOURCE MANAGEMENT

BLOCK I: MANAGEMENT: CONCEPT, ELEMENTS, MANAGEMENT THOUGHTS, INTRODUCTION OF HUMAN RESOURCE MANAGEMENT

UNIT I

Management: Concept, elements, principles and functions of management;

UNIT II

Management thoughts: Henry Fayol, F.W.Taylor, and Peter Drucker.

UNIT III

Human resource management: Definition, scope, evolution, and functions.

BLOCK II: HUMAN RESOURCE POLICY AND HUMAN RESOURCE FUNCTIONS, JOB ANALYSIS, WAGE AND SALARY ADMINISTRATION

UNIT IV

Human resource policy: Formulation and implementation; duties, responsibilities, and qualities of human resource manager and challenges for the 21st century.

UNIT V

Human Resource functions: Human resource planning, recruitment, selection, induction and placement, promotion, transfer

UNIT VI

Job analysis, training, performance appraisal; discipline and disciplinary procedure, personnel records and personnel research; HR audit.

UNIT VII

Wage and salary administration: job evaluation: definition, objectives; methods, advantages and limitation;

BLOCK III: THEORIES OF WAGES, HUMAN RESOURCE PLANNING, ESTIMATES OF INTERNAL SUPPLY

UNIT VIII

Theories of wages: concepts of wages, wage differentials – financial and non-financial incentives.

UNIT IX

Human Resource Planning: The demand for Human Resources - The Supply of Human Resources

UNIT X

Estimates of Internal supply and Estimates of External supply Implementation of Human Resources Plans

BLOCK IV: RECRUITMENT OF HUMAN RESOURCES AND HUMAN RESOURCE PLANS UNIT XI

Recruitment of Human Resources - Constraints on Recruitment: Organizational policies.

UNIT XII

Human Resource Plans - Affirmation Action Plans - Recruiter habits - Environmental Conditions - Job Requirements

BLOCK V: INDUSTRIAL SOCIAL WORK AND LABOUR PROBLEMS AND COUNSELING UNIT XIII

Industrial social work: meaning, scope, and relevance; application of social work methods in the industrial sector;

UNIT XIV

Labor problems and industrial counseling in industries and working with the families of industrial workers: meaning, scope, relevance, advantages and disadvantages.

References

- **Agarwal, Rameshwar Dayal**, ed. *Dynamics of Personnel Management in India: a Book of Reading*. Tata McGraw-Hill, 1973.
- **Davar, Rustom S.** *Personnel management and industrial relations in India*. International Book Distributors, 1976.
- **Flippo, Edwin B.** *Principles of personnel management*. McGraw-Hill, 1976.
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- **Indian Institute of Personnel Management.** *Personnel Management in Indi*. Asia Publishing. 1977.
- **Mamoria C.B.** *personnel management*. Himalaya Publishing House. 1985

RURAL COMMUNITY DEVELOPMENT

THIRD SEMESTER

Course Code	Title of the Course
34933 A	RURAL COMMUNITY DEVELOPMENT

Course Objectives:

- To enable students to understand rural realities.
- To develop sensitivity and commitment for working with rural communities.
- To impart knowledge about the governmental and voluntary efforts towards rural community development.
- To equip students with specific skills and techniques of working with rural communities.

Outcome of the Course

- This course is aimed at enlightening the students on the concepts of Rural Community Development.

Contents:

BLOCK I: RURAL COMMUNITY: MEANING, DEFINITION, RURAL SOCIAL STRUCTURE AND CONSTRAINTS TO RURAL DEVELOPMENT AND RURAL PROBLEMS

Unit I

Rural Community: meaning, definition, characteristics - types of villages - scope of studying the rural community – rural community relation to social work

Unit II

Rural social structure and constraints to rural development; rural organization and rural development - school, co-operatives, village panchayat, youth club, women's club, self- help groups etc.

Rural problems: poverty, illiteracy, unemployment, problems related to agriculture (land holding, productivity, marketing), and community health.

BLOCK II: COMMUNITY DEVELOPMENT, RURAL EXTENSION, RURAL DEVELOPMENT ADMINISTRATION AND RURAL DEVELOPMENT AGENCIES

Unit IV

Community Development: meaning, objectives, scope, principles, process, models - methods - earlier experiments in rural developments - Sriniketan experiment, Gurgaon experiment, marthandam experiment, Baroda experiment, Firkha development scheme, Etawa pilot project, Nilokheri experiment - Gandhian constructive programmes - community development during post launching period - national extension services and various phases of community development

Unit V

Rural extension: concept, characteristics, philosophy, objectives, principles, approaches, and methods and limitations - approaches to rural community development: Tagore, Gandhi and C. Subramaniam, etc.

Unit VI

Rural Development Administration: history, structure: central, state, district and block levels and its functions - panchayat raj institutions (PRI): origin and evolution - philosophy, new panchayat raj system- 73rd amendment and its salient features - structure of PRIs - powers of Gram Sabha - features of Tamil Nadu Panchayat Act, 1994 - constitution of village panchayats, panchayat union and district panchayat - elections to PRIs - reservation for women, SC/STs - administration of PRIs - taxes and levies - assigned and shared revenues, grants - government of India finance commission, state finance commission, development grants under various schemes - powers of PRIs in implementation of RCD programmes,

Unit VII

Rural development agencies: council for advancement of people's action and rural technology (CAPART) - national institute of rural development (NIRD) - national bank for agriculture and rural development (NABARD) - regional rural banks (RRB) - district rural development agency (DRDA) - statistics related to rural development - training of PRI functionaries.

BLOCK III: SOCIAL DEVELOPMENT, AGRICULTURE AND RURAL DEVELOPMENT AND COMMUNICATION AND RURAL DEVELOPMENT

Unit VIII

Social Development: definition, approaches and indicators - social development in India: historical and social context of development in India - pre and post independence period and

government measures and five years plan in India - development sectors: agriculture, and cooperation, and education and health

Unit IX

Agriculture and rural development: share of agriculture in the national income - agriculture as a source of livelihood, employment, raw materials, capital for development and manpower - agrarian and land reforms – green, white and yellow revolution - Cooperatives and rural development: meaning, principles, objectives, functions, structure, and performance of rural credit and non-credit cooperatives - registration procedures of cooperative societies - Education and rural development: universalisation of primary education: problems; adult education-meaning, history, strategies and programmes – social education, workers education, farmers training and functional literacy and non- formal education - national literacy mission - health and rural development.

Unit X

Communication and Rural Development: meaning, scope, channels and stages of communication - methods communication: interpersonal communication, group communication and mass communication - skills of communication: questioning, reinforcing, listening, reflecting and exploring, theories and models of communication -transactional analysis and conflict resolution - barriers in communication - communication and its role in rural development - satellite instructional television experiments (site): aims and objectives; use of media in communication - mass media: exhibition, film, press, radio, TV - traditional local folk media: puppet shows, drama, street play, folk songs and folk dances - use of talks, meetings, conferences, camps; campaign; communication through leaflets, pamphlets, bulletins, circulars, posters and notice boards

BLOCK IV: COMMUNITY PARTICIPATION: MEANING, ELEMENTS, AND RURAL DEVELOPMENT PROGRAMMES

Unit XI

Community participation: meaning, elements, base, principles and obstacles in community participation - participatory communication – concept, and methods - use of communication for community participation - participatory communication for rural development.

Unit XII

Rural Development Programmes: Area based Programmes: drought prone area programme (DADP) - hill area development programme (HADP) - tribal area development programme (TADP) - command area development programme (CADP), - wasteland development

programme, desert development programme (DDP) - watershed development programme, intensive agriculture area programme (IAAP) - high yield variety programme (green revolution blue white and yellow revolution) - hariyali - MP's area development programme - MLA's area development programme, etc.

BLOCK V: TARGET BASED PROGRAMMES AND WELFARE PROGRAMMES

Unit XIII

Target based programmes: IRDP, TRYSEM, NREP, RLEGP, JR, Indira Awaas Yozana, millions wells scheme, Swarna Jayanthi Grama Swarajgar Yojana (SJGSY), employment assurance scheme, new life, etc - employment guaranty legislation – its salient features- mahatma Gandhi national rural employment guarantee scheme.

Unit XIV

Welfare programmes: minimum needs programme - noon meal scheme - development of women and children in rural areas (DWCRA) - integrated child development scheme (ICDS), Tamil Nadu integrated nutrition programme (TNINP) - antyodaya programme - annapoorana scheme - programme of rural health and total sanitation - five year plans and strategies for rural development - role of social workers, concept of provision of urban infrastructure in rural areas (PURA) - role of voluntary organisation in rural community development, problems and limitations.

Note: while setting question paper, emphasis must be given only on the objectives, strategies, target (physical & financial) & achievements of various programmes mentioned in unit –v

References:

- **Biddle, William W., and Loureide J. Biddle.** "The Community Development Process: The Rediscovery of Local Initiative." (1965).
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COMMUNITY HEALTH THIRD

SEMESTER

Course Code	Title of the Course
34933 B	COMMUNITY HEALTH

Objectives:

- To inform the students about health and hygiene and related aspects.
- To enlighten the students about diseases and occupational health.
- To teach students about the health care delivery system.
- To make the students aware about health education.
- To inform students about health work in the community.

Outcome of the course

- The purpose of this course is to inform the students about the various aspects concerning community health.

BLOCK I: HEALTH AND HYGIENE, SOCIAL AND PREVENTIVE MEDICINE AND NUTRITION AND HEALTH

UNIT I

Health and Hygiene: Health, Primary Health Care and Public Health; Concepts and definition, factors influencing health

UNIT II

Social and Preventive Medicine, Levels of disease prevention, comprehensive health indicators – vital health statistics; Community Mental Health and Community Psychiatry.

UNIT III

Nutrition and Health: Nutrient Groups: Functions, sources and requirement; Caloric requirements for different age groups; Balanced diet, Malnutrition, Deficiency diseases, prevention of Nutrition problems

BLOCK II: HYGIENE: PERSONAL, FOOD AND ENVIRONMENTAL HYGIENE, DISEASES AND OCCUPATIONAL HEALTH, MAJOR NON-COMMUNICABLE DISEASES AND HEALTH CARE DELIVERY SYSTEM

UNIT IV

Hygiene: Personal, food and Environmental hygiene; Relationship between health and hygiene; Environmental pollution; Living conditions: housing, sanitation, waste disposal and their influence on health.

UNIT V

Diseases and Occupational Health: Major Communicable diseases: Symptoms, Etiology, Transmission, Prevention and Treatment of: Leprosy, Tuberculosis, STD, HIV, Polio, Malaria, Cholera and Typhoid. Immunisation schedule for children.

UNIT VI

Major Non-communicable diseases: Cancer, Diabetes, Hypertension, Asthma, Cardiac disorders. Occupational Health: Occupational Health hazards, Common Occupational diseases

UNIT VII

Health care delivery system: Mental Hygiene movements, trends in Community Mental Health, Public health model of mental health prevention and promotion

BLOCK III: SCHOOL HEALTH, HEALTH CARE DELIVERY SYSTEM AT THE NATIONAL AND STATE LEVELS, PRIMARY HEALTH CENTRE, MODELS OF COMMUNITY HEALTH, USE OF AUDIO- VISUAL AIDS AND MASS MEDIA

UNIT VIII

School Health: Helping teachers identify problems of physical and mental health, making appropriate referrals, involving and motivating teachers and children; Involvement of Voluntary Agencies

UNIT IX

Health care delivery system at the National and State levels, primary health centre, models of community health. Salient features of legislations related to health: MTP ACT (Amendment), 2002, Mental Health Act 1987, Factories Act 1949, ESI Act 1948; Allocation for Health care in IX Five Year Plan; Health Policies 2003

UNIT X

Use of Audio- Visual Aids and Mass Media; First Aid: Concept and methods of dealing with victims of accidents and health education in hospital and rural/slum/ tribal areas.

block iv: Health Education: Meaning and importance and Health work in the community

UNIT XI

Health Education: Meaning and importance, Principles of health education, Techniques and strategies for various community groups, Family Planning: Importance and Techniques

UNIT XII

Health work in the community: Major health problems related to women and children; Socio-cultural practices, beliefs and myths influencing community health; Assessing community health needs, Mobilizing core groups; community participation:

BLOCK V: PRINCIPLES AND PRACTICE OF COMMUNITY PARTICIPATION AND SOCIAL WORK INTERVENTION IN RELATION

UNIT XIII

Principles and practice of Community Participation, Training of multipurpose workers in community health programmes.

UNIT XIV

Social Work Intervention in relation to: Immunization, nutrition, family planning, maternal and child health, environmental issues (hygiene, pollution and sanitation), accident prevention, suicide prevention, alcoholism and drug abuse prevention.

References:

- **Adelson D. & Kalis L.B:** Community psychology and mental health - perspectives and challenges, Chandler Pub., 1970.
- **Barasi, Mary E.:** Human nutrition, Edward Arnold, London, 1987.
- **Bartlett, Harriet M.:** Social work practice in health field, New York, National Association of Social Workers, 1961.
- **Brody, eb.** "Social dimensions of mental-health-world-health-org." (1983): 67-70.
- **Broskowschi A. Marks E. & Budman S.H.:** Linking health and mental health, Sage Pub, London, 1981.
- **Caplan, Gerald:** An approach to community mental health, New York, Grune & Stratton, 1961.
- **Egbert, Seneca:** Manual of Hygiene and sanitation, Lea & Febiger, New York 1926
- **Goel, S. L.** *Public Health Administration*. Sterling Publishers Private, 1984.
- **Kumar, Ram.** *Social and preventive health administration*. APH Publishing, 1992.
- **Leavellhugh Rodman & Clark, Gurney E.:** Preventive medicine for the doctor in his community, Mc Grow Hill, 1958.
- **Mahjan B.K.:** Health services in India, Jam Nagar, Aruna R.Mahajan, 1969.
- **Naick J.P.** An alternative system of health care services in India - some proposals, Allied Pub.1977.
- **Park J.R & Park K.:** Text book of preventive and social medicine, Jabalpur, M/S Banashidass, 2009
- **Park, John Everett.** "Textbook of preventive and social medicine (A treatise on community health)"1970

Course Code	Title of the Course
34933 C	HUMAN RESOURCE DEVELOPMENT

BLOCK I: HUMAN RESOURCE DEVELOPMENT: DEFINITION - ORIGIN, APPROACHES TO HUMAN RESOURCE DEVELOPMENT AND CHALLENGES OF HUMAN RESOURCE DEVELOPMENT

UNIT I

Human Resource Development: Definition - Origin and Development of HRD

UNIT II

Approaches to HRD: Human Capital Approach - Social Psychological Approach - The Poverty Alleviation approach - The World Development Context

UNIT III

Challenges of Human Resource Development: Employee Obsolescence - Socio technical Changes

BLOCK II: DEVELOPMENT AND AFFIRMATIVE ACTION, CAREER PLANNING, CAREER EDUCATION AND CAREER DEVELOPMENT

UNIT IV

Development and Affirmative Action and Employee turnover

UNIT V

Career Planning: Definition - Career Planning and Employee Needs - Personnel Departments and Career Planning

UNIT VI

Career Education, Information on career planning and career counseling.

UNIT VII

Career Development: Definition - Individual Career development - Personnel supported career development

BLOCK III: HUMAN RESOURCE PLANNING, ESTIMATES OF INTERNAL SUPPLY AND ESTIMATES OF EXTERNAL SUPPLY IMPLEMENTATION OF HUMAN RESOURCES PLANS AND RECRUITMENT OF HUMAN RESOURCES

UNIT VIII

Human Resource Planning: The demand for Human Resources - The Supply of Human Resources

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UNIT IX

Estimates of Internal supply and Estimates of External supply Implementation of Human Resources Plans

UNIT X

Recruitment of Human Resources - Constraints on Recruitment: Organizational policies.

BLOCK IV: HUMAN RESOURCE PLANS AND CHANNELS OF RECRUITMENT

UNIT XI

Human Resource Plans - Affirmation Action Plans - Recruiter habits - Environmental Conditions - Job Requirements

UNIT XII

Channels of Recruitment: Walk-ins and Write-ins - Employee referrals - Advertising

BLOCK IV: STATE EMPLOYMENT SECURITY AGENCIES, PRIVATE PLACEMENT AGENCIES AND QUALITY OF WORK LIFE

UNIT XIII

State Employment Security agencies - Private Placement Agencies - Professional Search firms - Educational Institutions - Professional Associations, Government funded training programs - Temporary help agencies - Departing employees - Open house

UNIT XIV

Quality of Work Life: Definition - QWL through employee involvement

WOMEN AND CHILD WELFARE

THIRD SEMESTER

Course Code	Title of the Course
34933 D	WOMEN AND CHILD WELFARE

The main purpose of the paper is to highlight the issue of women and child welfare including the laws that are in place to protect them.

Objectives course:

1. To inform the students about the demographic profile of women in India.
2. To enlighten the students on women's welfare and development.
3. To teach students about the issues concerning children.
4. To make students aware about the problems of children.

Contents:

BLOCK I: DEMOGRAPHIC PROFILE OF WOMEN IN INDIA, STATUS OF WOMEN WITH REFERENCE TO HEALTH AND PROBLEMS OF WOMEN

UNIT I

Demographic profile of women in India: changing role and status of women in India; role differences of women in joint and nuclear families; position of women in tribal, rural and urban areas

UNIT II

Status of women with reference to health, education, employment and political

UNIT III

Problems of women: gender bias, child marriage, dowry, widowhood, desertion, divorce, destitution, educational backwardness, discrimination in employment

BLOCK II: PROBLEMS OF EMPLOYED WOMEN AND MOTHERS, WOMEN'S WELFARE AND DEVELOPMENT AND GOVERNMENT OF INDIA SCHEMES FOR WOMEN'S DEVELOPMENT

UNIT IV

Problems of employed women and mothers; problems of unmarried mothers; delinquency, prostitution, trafficking in women and girls; theories on violence against women

UNIT V

Women's welfare and Development: historical development of women welfare; indicators of women development; central and state government policy on women

UNIT VI

Government of India schemes for women's development; national commission for women, institutional and non-institutional services for women.

BLOCK III: WOMEN AND LAW, WOMEN EMPOWERMENT

UNIT VII

Women and law: legislations relating to women; legal and constitutional rights, marriage, divorce, and property rights; labour laws for women; family violence, family courts.

UNIT VIII

Women empowerment: meaning, characteristics of an empowered women; role of self help groups in women empowerment; feminism; women's movement abroad and in India, India's five year plans- policies, and strategies and programmes

BLOCK IV: CHILD: MEANING, DEMOGRAPHIC PROFILE OF CHILDREN IN INDIA, PROBLEMS OF CHILDREN AND SCHOOL OF SOCIAL WORK

UNIT IX

Child: meaning, demographic profile of children in India – rural & urban, its place in family and society; status of girl child; concept of socialization; factors influencing socialization; role of family in socialization; parental socialization during childhood and adolescence; role of peers in socialization, role of school in socialization; impact of television on children.

UNIT X

Problems of Children: childhood diseases and immunization; behavior disorders of children; causes, consequences and prevention of child malnutrition, nutritional disorders, neglected children and abused children, child workers, child trafficking, child prostitution, HIV/AIDS affected and infected children; children with disabilities, school dropouts.

UNIT XI

School social work: concept, need, objectives, and functions.

BLOCK V: UNITED NATIONS CHARTER OF CHILDREN RIGHTS, PLACE OF INSTITUTIONAL CARE AND CHILD WELFARE PROGRAMMES

UNIT XII

U.N. charter of children rights; institutional services; constitutional safe guards; five year plans- policies

UNIT XIII

Place of institutional care: scope and limitation, national and international institutions and its role in child welfare; child labour- policies, constitutional and legislative provisions and programmes at national and international level

UNIT XIV

Child welfare programmes: non- institutional care: organization and functions of crèches, day care center, sponsorship programme, foster-care, adoption, recreation services; integrated child development schemes; services for children in need of special care; exceptional children neglected and abused children; child guidance services.

References:

Avasthi, Abha, and Anil K. Srivastava. *Modernity, Feminism, and Women Empowerment*. Rawat Publications, 2001.

Chowdhry, Dharam Paul. *Child welfare [and] development*. Atma Ram, 1980. Devi, Laxmi. *Child and family welfare*. Egully. com, 1998.

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P. S., and L. M. Rebello. "Nutrition for mother and child." *Nutrition for mother and child*. (1962).

TRIBAL COMMUNITY DEVELOPMENT

THIRD SEMESTER

Course Code	Title of the Course
34934A	TRIBAL COMMUNITY DEVELOPMENT

Course Objectives:

- To enable students to understand the unique nature of tribal culture.
- To develop sensitivity and commitment for working with tribal community.
- To provide knowledge on the government and voluntary efforts towards tribal development.
- To equip students with specific skills and techniques of working with tribal communities.

Outcomes of the Course

- The aim of this course is to enable students to understand the problems of tribal people and also to gain an understanding of project management.

Contents:

BLOCK I: TRIBES: DEFINITION, CONCEPT, REGIONAL DISTRIBUTION OF TRIBES AND NEHRU'S PANCHSHEEL PRINCIPLES OF TRIBES AND CULTURAL AND RELIGIOUS ASPECTS

UNIT I

Tribes: definition, concept, characteristics of the tribal community; nomadic and de-notified tribes; history of Indian tribes and tribes in Tamil Nadu

UNIT II

Regional distribution of tribes and Nehru's Panchsheel principles of tribes; social system of tribes: socio economic conditions;

UNIT III

Cultural and religious aspects; status of women: dress, food, & marriage-polygamy, polyandry, dormitory marriage; status of children; tribal leadership and political participation -local, state, and national levels

BLOCK II: TRIBAL DEVELOPMENT ADMINISTRATION, CONSTITUTIONAL PROVISIONS FOR THE PROTECTION OF TRIBES AND TRIBAL PROBLEMS AND PROGRAMMES

UNIT IV

Tribal Development Administration: administrative structure at central, state, and district

levels; hill development councils; functions of tribal development blocks/agencies

UNIT V

Constitutional provisions for the protection of tribes; research and training in tribal development, role of voluntary agencies in tribal development.

UNIT VI

Tribal Problems and Programmes: child marriage, poverty, ill-health, illiteracy, sexually transmitted diseases and acquired immune deficiency syndrome, exploitation and atrocities on tribes; immigration and its related problems; lack of infrastructure facilities and amenities

BLOCK III: TRIBAL RESETTLEMENT AND REHABILITATION, TRIBAL AREA DEVELOPMENT PROGRAMMES AND INTRODUCTION TO PROJECT MANAGEMENT

UNIT VII

Tribal resettlement and rehabilitation and its related problems; tribal movements and tribal revolt, naxalbari movement. tribal development programmes: tribal development policies

UNIT VIII

Tribal area development programme; hill area development programmes; tribal sub- plans, forest land cultivation, need and importance of social work practice in tribal areas, application of social work methods in tribal development, problems in implementation of tribal development programmes.

UNIT IX

Introduction to project Management: concept, objectives, principles, scope, importance and methodology; micro and macro level planning; project dimensions: identification and formulation;

BLOCK IV: DETAILED PROJECT REPORT (DPR); PROJECT APPRAISAL, PLANNING AND MANAGEMENT OF PROJECT IMPLEMENTATION AND MANAGEMENT INFORMATION SYSTEM

UNIT X

Detailed project report (DPR); project appraisal: technical, economic and financial feasibility; participatory development (participatory planning and participatory rural appraisal (PRA), participatory management and participatory evaluation).

UNIT XI

Planning and Management of Project Implementation: activity planning, network analysis, monitoring of development projects

UNIT XII

Management information system, project evaluation: programme evaluation and review technique (PERT) and critical path method (CPM);

BLOCK V: RESOURCE MOBILIZATION: TECHNIQUES OF FUND RAISING, SPECIAL PROVISIONS RELATED TO INCOME TAX EXEMPTION FOR DEVELOPMENT ORGANIZATIONS

UNIT XIII

Resource mobilization: techniques of fund raising; statutory requirements for the formation of society and trust; foreign contribution regulation act;

UNIT XIV

Special provisions related to income tax exemption for development organizations

References:

- **Chaudhuri.** *Tribal Development in India*, Inter India Pub. 1981
- **Patel, Mahendra Lal.** *Planning strategy for tribal development*. Vol. 111. Inter-India Publications, 1984.
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MEDICAL SOCIAL WORK

THIRD SEMESTER

Course Code	Title of the Course
34934B	MEDICAL SOCIAL WORK

Objectives:

- To introduce the students to the concept of medical social work and related aspects.
- To inform the students about the Psychological, Social and economic implications of illness and disability.
- To enlighten the students about hospital as a formal organization.
- To make students aware of Impairment, Disability, and Handicap.
- To highlight the specific needs and problems of patients and their families.

Outcome of the course

- The aim of this course is to introduce the students to medical social work and to highlight its specific aspects.

Contents:

BLOCK I: MEDICAL SOCIAL WORK, MEDICAL SOCIOLOGY AND ITS RELEVANCE TO MEDICAL SOCIAL WORK PRACTICE AND PSYCHOLOGICAL, SOCIAL AND ECONOMIC IMPLICATIONS OF ILLNESS AND DISABILITY

UNIT I

Medical social work: definition, concept, objectives, its nature, need and scope; the roles and functions of a medical social worker; historical development in India and abroad

UNIT II

Medical sociology and its relevance to medical social work practice; practice of social work methods in hospital settings: their need and importance in working with patients and families: scope and limitations of practice

UNIT III

Psychological, social and economic implications of illness and disability: for the patient and his family;

BLOCK II: CONCEPTS OF PATIENT AS A PERSON, THE HOSPITAL AS A FORMAL ORGANIZATION AND MEDICAL SOCIAL WORK DEPARTMENT

UNIT IV

Concepts of patient as a person, patient as a whole, the psychosomatic approach; multidisciplinary team work: need, importance, and principles; role of social worker as a member of the team.

UNIT V

The hospital as a formal organization: its goals, technology, structure and functions, departments, administrative procedures, implications of hospitalization for the patient and his family

UNIT VI

Medical social work department: staffing, organization and functions; extension services; public relations

BLOCK III: IMPAIRMENT, DISABILITY AND HANDICAP, PSYCHOSOCIAL PROBLEMS AND IMPLICATIONS FOR EACH SPECIFIC HANDICAP AND ROLE OF THE MEDICAL SOCIAL WORKER IN INTERVENTION

UNIT VII

Impairment, Disability and Handicap: causes, types and classification of physical handicaps

UNIT VIII

Orthopedic disability, visual handicap, aural impairment and speech disability; psychosocial problems and implications for each specific handicap

UNIT IX

Role of the medical social worker in intervention; physical medicine, physiotherapy and occupational therapy

BLOCK IV: OBJECTIVES AND TYPES; REHABILITATION, SPECIFIC NEEDS AND PROBLEMS OF PATIENTS AND THEIR FAMILIES, ROLE OF THE MEDICAL SOCIAL WORKER IN THE FOLLOWING SETTINGS: OUTPATIENT UNIT, INTENSIVE CARE UNIT

UNIT X

Objectives and types; rehabilitation: definition, concept, principles, and process; role of the medical social worker in rehabilitation planning, resource mobilization, and follow-up.

UNIT XI

Specific needs and problems of patients and their families: need for assistance

UNIT XII

Role of the medical social worker in the following settings: outpatient unit, intensive care unit

BLOCK V: PEDIATRIC WARD, MATERNITY WARD AND TRAINING OF THE VOLUNTEERS TO WORK WITH THE CHRONICALLY ILL IN THE COMMUNITY

UNIT XIII

pediatric ward, maternity ward, abortion clinic, family planning centre, std clinic, HIV clinic, orthopedic department, cardiology department, blood bank, TB sanatorium and cancer hospitals

UNIT XIV

Training of the volunteers to work with the chronically ill in the community, and special focus on rural/tribal areas

References:

- **Bartlett, Harriett Moulton.** *Social work practice in the health field.* Natl Assn of Social Workers Pr, 1961.
- **Cannon, Ida Maud.** *On the social frontier of medicine: Pioneering in medical social service.* Harvard University Press, 1952.
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- **Field, Minna.** "Patients are people." *A Medical Social approach to prolonged illness,* (1967).
- **Goldstine, Dora.** *Expanding horizons in medical social work.* University of Chicago Press, 1955.
- **Hamilton, Kenneth W.** "Counseling the handicapped in the rehabilitation process." (1950).
- **Hubschman, Lynn.** *Hospital social work practice.* Praeger Publishers, 1983.
- **Pattison, Harry Archibald, ed.** *The handicapped and their rehabilitation.* Thomas, 1957.

LABOUR WELFARE AND INDUSTRIAL RELATIONS

THIRD SEMESTER

Course Code	Title of the Course
34934C	LABOUR WELFARE AND INDUSTRIAL RELATIONS

Objectives:

- To highlight the issue of labour welfare.
- To inform students about the labour legislations in India.
- To enlighten students about social security legislations.
- To introduce students to the concept of industrial relations.
- To highlight the issue of industrial conflict.

Outcome of the course

- To familiarize students with the concepts of industrial relations and the current industrial relations scenario in India.

Contents:

BLOCK I: LABOUR WELFARE: AN INTRODUCTION ON INDIAN CONSTITUTION, CONCEPT, SCOPE, PRINCIPLES, THEORIES, ORIGIN AND GROWTH OF LABOUR WELFARE IN INDIA AND LABOUR PROBLEMS

UNIT I

Labour welfare: an introduction on Indian constitution - unorganized labour sector in industry and agriculture - problems faced by unorganized labour sector - constitutional safeguards to unorganized labour - judicial activism (case laws).

UNIT II

Concept, scope, principles, theories, origin and growth of labour welfare in India; types of welfare

UNIT III

Labour problems: absenteeism addiction, indebtedness, family distress and social work intervention

BLOCK II: LABOUR WELFARE PROGRAMMES, LABOUR WELFARE OFFICER: STATUS, ROLE, DUTIES AND FUNCTIONS, LABOUR LEGISLATIONS IN INDIA

UNIT IV

labour welfare programmes: safety, health and hygiene, occupational diseases, crèche, canteen, credit society, worker's education

UNIT V

labour welfare officer: status, role, duties and functions; labour welfare agencies in India and international

UNIT VI

Labour legislations in India: factories act 1948; the plantation labour act 1951; Indian mines act 1952, apprentices act 1961;

BLOCK III: LABOUR RELATIONS LEGISLATIONS, EMPLOYMENT LEGISLATIONS AND SOCIAL SECURITY LEGISLATIONS

UNIT VII

Labour relations legislations: the trade union act 1926, industrial disputes act 1947; Tamil Nadu shops and establishment act 1947, Tamil Nadu industrial establishment (national and festival holidays) act 1951;

UNIT VIII

Employment legislations: industrial disputes act 1947, the industrial employment (standing orders) act 1946, employment exchanges (compulsory notification of vacancies) act 1959, employment of children act 1938.UNIT IX

Social Security Legislations: workmen's compensation act 1923, employees' state insurance act 1948; employee's provident fund act 1952 including the pension scheme 1995; the maternity benefit act 1961, payment of gratuity act 1972.

BLOCK IV: WAGE LEGISLATIONS AND INDUSTRIAL RELATIONS

UNIT X

Wage legislations: the payment of wages act 1936, the minimum wages act 1948, the payment of bonus act 1965, the equal remuneration act, 1976; the Tamil Nadu payment of subsistence allowance act and case laws.

UNIT XI

Industrial Relations: definition, meaning of industrial relations, characteristics of a good industrial relations system - changing profile of industrial workers – labour in constitution – administration of labour department.

BLOCK V: ILO – HISTORY, AIMS, OBJECTIVES, INDUSTRIAL CONFLICT AND INDUSTRIAL DEMOCRACY

UNIT XII

ILO – history, aims, objectives, structure and functions, social security measures, achievements, influence of ILO on Indian industrial relations - labour welfare practices in India. Trade unionism – history, objectives, problems faced, recognition – trade union movement in India – employer federation, collective bargaining : methods, issues, problem and settlement

UNIT XIII

Industrial Conflict: standing orders, industrial disputes, settlement machineries, industrial peace and harmony, industrial conflict types, causes, consequences, grievance, discipline, domestic enquiry – recent trends

UNIT XIV

Industrial democracy – workers participation: objectives schemes, methods – participation schemes in industries in India - quality circles – quality of work life.

References:

- **Ashdir , Vijay.** *Management of Industrial Relations*. Kalyani Publishers, 2003.
- **Bhangoo, Kesar Singh.** *Dynamics of industrial relations*. Deep & Deep Publications, 1995.
- **Giri, Varahagiri Venkata.** "Labour problems in Indian industry." (1960).
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- **Monappa, Arun.** "Industrial Relations, Ninth print (1995)."
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- **Prasad NGK.** *Factories Law and Rules applicable to TN State, Vols. I, II, III, IV*. Madras Book Agency. 1978.
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- **Srivastava, Suresh C.** *Industrial relations and labour laws*. Vikas Publishing House Pvt Ltd, 2007.

WELFARE OF THE YOUTHS AND THE AGED

THIRD SEMESTER

Course Code	Title of the Course
34934D	WELFARE OF THE YOUTH AND THE AGED

The purpose of this course is to highlight the issue of welfare of the youth and aged.

Objectives:

1. To introduce the students to the concept of youth and youth as a special category.
2. To enlighten the students on the youth movement in India.
3. To inform students about youth welfare.
4. To talk teach students about the issues being faced by the aged.
5. To highlight the existing services for the aged.

Contents

BLOCK I: YOUTH: CONCEPT, DEMOGRAPHIC PROFILE IN RURAL AND URBAN, PROCESS OF SOCIALIZATION OF INDIAN YOUTH AND YOUTH AS SPECIAL CATEGORY

UNIT I

Youth: concept, demographic profile in rural and urban; youth in Indian society: a historical over view of their role.

UNIT II

Process of socialization of Indian youth; aspirations of the youth in contemporary Indian society; role of youth in social change and national development.

UNIT III

Youth as special category: basic needs of youth: problems of youth in relation to family life; social relation, education, recreation, leisure, recreation, employment, sex, marriage, political status, adjust mental problem of the youth.

BLOCK II: YOUTH MOVEMENT IN INDIA, YOUTH WORK, YOUTH WELFARE

UNIT IV

Youth Movement in India: YMCA, YWCA, SFI, DYFI and other youth movements of various political parties in India, ideologies of youth movements and its role in nation building; youth unrest; need for youth policy in India.

UNIT V

Youth work: concept, objectives, approaches to youth work in tribal, rural and urban areas: training programmes.

UNIT VI

Youth Welfare: definition and scope: philosophy and evolution of youth welfare programmes in India.

BLOCK III: SERVICES FOR STUDENT YOUTH, YOUTH FESTIVALS AND YOUTH CAMP, YOUTH WELFARE PROGRAMMES UNDER GOVERNMENT AND VOLUNTARY AGENCIES

UNIT VII

Services for student youth: education, physical education, sports, recreation; vocational guidance, youth services, bhārath scouts and guides, national services scheme, community and social service scheme, national cadet corps.

UNIT VIII

Youth festivals and youth camp; student counseling; need, services, for non-student youth; non- formal education for school drop outs; Nehru yuvak Kendra, vishwa yuva Kendra

UNIT IX

Youth welfare programmes under government and voluntary agencies; organization by and for youth, -youth policies, strategies and programmes in India's five year plans.

BLOCK IV: AGED: DEFINITION, TYPES, DEMOGRAPHIC PROFILES, THEORIES OF AGING, SERVICES FOR THE AGED

UNIT X

Aged: definition, types, demographic profiles; aging population in rural and urban gerontology

UNIT XI

Theories of aging; dimension of aging; changing status of the aged in India society; problems of the aged- health, family, social relation and employment; perspective on the population of aging in India; retirement as a social and economic event; family, social, economic and religious life of retired people.

UNIT XII

Services for the aged: geriatric services in India; social work and social services and the aged; family social work with the aged.

BLOCK V: SOCIAL WELFARE SERVICES FOR THE AGED, NATIONAL AND INTERNATIONAL AGENCIES FOR AGED WELFARE, POLICIES, STRATEGIES AND PROGRAMMES

UNIT XIII

Social welfare services for the aged; old age social security measures in India and other countries; physical activity, rehabilitation and community linkage programme; gerontophenotime-an aging reversal agent

UNIT XIV

National and international agencies for aged welfare, policies, strategies and programmes for the elderly in India's five year plans.

References:

John, Vadekedath Varkey. *Youth and National goals*. Vol. 1. New Delhi: Vishwa Yuvak Kendra, 1974.

Khan, Rafiq, M. *Rural Youth*. Vishwa Yuvak Kendra.1975 Kirpal, Prem. *Youth and established culture*. 1976.

Krishnan, Prabha. "A Library primer for youth workers." *Vishwa Yuvak Kendra*.1974.

Kumar, Ram. *Problems, Planning and Development of Youth Health*. Deep and Deep, 1986.

Kuriakose, P. T. *An approach to youth work in India*. New Delhi: Young Asia Publications, 1972.

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Misra, D. K., C. M. Jain, and S. L. Doshi. *Youth, university, and community*. S. Chand, 1975. Muttagi, P. K. "Aging issues and old age care." (1997).

Nair, P. Sadasivan, Murali Dhar Vemuri, and Faujdar Ram. *Indian Youth: A Profile*. Mittal Publications, 1989.

William, Korslm and Joseph, Julian. *Social Problems*. Prentice Hall. 1955

FIELD WORK PRACTICUM -

III THIRD SEMESTER

Course Code	Title of the Course
34935	FIELD WORK PRACTICUM - III

Objective of the course

To be based on the student's specialization

- Agency placement for a minimum of 12 days.
- Content of Field work to be finalized between the concerned department and the placement agency according to the field of specialization.

Guidelines for Community Development Specialization

1. Exposure to DRDA/Panchayat Union and Panchayat administration
2. Orientation to community based surveys/PRA
3. Organize at least two need based community programmes
4. Practice of Social Work methods in Community Settings (Rural/Tribal areas)
5. Knowledge of CD programmes.

Guidelines for Medical and Psychiatric Social Work Specialization

1. Practice of Social Case Work with at least five clients
2. Practice of Social Group Work with at least two groups
3. One Community based programme.

Guidelines for HRM Specialization

1. Exposure to welfare measures and programmes in industries.
 2. Orientation to IR activities/Trade Union
 3. Understanding of Organization profile/Organizational Culture
 4. Knowledge of labour legislations.
1. Agency placement in generic settings of practice such as schools/old age homes/counselling centres/rehabilitation settings etc.
 2. The placement will be for a minimum duration of 12 field work days.
 3. Importance to be given for the practice of social work methods. Each student is expected to conduct case work with a minimum of three clients, group work with at least two groups, and organise one institutional/ community based programme (trainees of all specializations).

Evaluation: Internal : 25 marks

- 1. Case Work Practice : 5 marks
- 2. Group Work : 5 marks
- 3. Awareness Programme : 5 marks
- 4. Reporting : 5 marks
- 5. Attendance for field work : 5 marks

Total 25 marks

External (75 marks)

- 1. Theoretical Knowledge - 30 marks
- 2. Practice Skills - 25 marks
- 3. Mobilizing Resources - 10 marks
- 4. Communication and Presentation - 10 marks

Total - 75 marks

**DISASTER MANAGEMENT
FOURTH SEMESTER**

Course Code	Title of the Course
34941	DISASTER MANAGEMENT

Course Objectives:

- To understand ecosystem equilibrium and disequilibrium
- To develop skills to analyze factors contributing disaster
- To develop an understanding of the process disaster of disaster
- To develop skills to participate in disaster management
- To develop an understanding of the social worker's role in the team for disaster management.

Outcome of the course

- Disaster management is a process of pre disaster prevention, preparedness, education, and preparedness. It is important for Social Workers to learn this as they are involved in providing psychological assistance to survivors.

Contents:

BLOCK I: DISASTER: DEFINITION, DIMENSIONS OF DISASTER, TYPES OF DISASTER

UNIT I

Disaster: definition, dimensions of disaster, progress in vulnerability.

UNIT II

Types of disaster: Water and climate related: Floods and drainage management, droughts, cyclones, tsunami, tornadoes, hurricane, hailstorms, cloudburst, snow avalanches, heat and cold waves, thunder and lightning

UNIT III

Geological related: Earthquakes, landslides, mudflows, sea erosion, dam bursts and dam failures, mine fires.

BLOCK II: CHEMICAL, INDUSTRIAL AND NUCLEAR RELATED, PHASES OF DISASTER, PSYCHOLOGICAL FIRST AID, CRISIS AND EMERGENCY MANAGEMENT

UNIT IV

Chemical, industrial and nuclear related: road, rail transportation accidents including waterways – boat capsized, mine flooding, major building collapse, serial bomb blasts, festival

related disasters, electrical disasters, fires, forest fires, mine flooding, oil spills, village fires.; *biological related*: biological disasters, epidemics, cattle and bird epidemics, pest attacks, food poisoning.

UNIT V

Phases of disaster (rescue, relief, rehabilitation, rebuilding). Rescue, relief phase: Need assessment, rescue and relief provisions by Army, Police, Fire services, Panchayat Raj institutions.

UNIT VI

Psychological first aid, health camps, relief center, water and sanitation issues, epidemic breakages in camps, climatic changes and seasonal variations; humanitarian concerns in relief provision; management of relief experts, volunteers, materials, equipment; standard operation procedure to deal with trigger mechanism.

UNIT VII

Crisis and emergency management: government response system in disasters – central, state, district, taluk disaster management cell; trigger mechanisms – 11, 12, 13 levels of determination of disaster; BIRMS – Basic Initial Response Management Steps

BLOCK III: COMMUNICATION SYSTEMS DURING DISASTERS, IMPACT : PHYSICAL, SOCIAL, ECONOMIC, AND PSYCHOLOGICAL IMPACT OF DISASTERS AND HOUSING SUPPORT HOUSING AND MATERIALISTIC SUPPORT FOR THE DISASTER SURVIVORS

UNIT VIII

Communication systems during disasters: HAM (help all mankind) radio promotions, police wireless network, SMS, mobile services, satellite communications; warning systems in disasters.

UNIT IX

Impact : Physical, social, economic, and psychological impact of disasters. Impact on the individual, family, and community. Compensation: Compensation and legal issues among the disaster survivors. Assessment of damage. Providing compensation. Corruption in compensation.

UNIT X

Housing support Housing and materialistic support for the disaster survivors. Town planning after a major disaster. Maintaining minimum standard. Livelihood and community micro planning: Impact of disaster on livelihood and economic activities. Livelihood options for the

vulnerable groups Creating self-sustenance among the disaster survivors.

BLOCK IV: GENDER ISSUES IN DISASTER, SPECIAL NEEDS OF THE CHILDREN, ADOLESCENTS AND THE VULNERABLE GROUPS

UNIT XI

Gender issues in disaster: Special needs of the women, increased vulnerability, problems of the women and care provisions; special issues of the women in human made disaster; role of the women organisations and government; special needs of the men groups and vulnerable men working with PRI for Psychosocial care of the men.

UNIT XII

Special needs of the children, adolescents and the vulnerable groups; role of child care personnel for the children affected by disaster. (Teachers/ICDS); empowering caregivers after the disaster; methods of working with children affected by disaster; community care vs. institutional care after the disaster for the vulnerable/ destitute children; foster caring of the destitute children after the disaster.

BLOCK V: PSYCHOLOGICAL IMPACT OF DISASTER IN DIFFERENT PHASE, CAPACITY BUILDING

UNIT XIII

Psychological impact of disaster in different phase behavioral disorders subsequent to disasters including PTSD; methods of providing psychosocial care to the disaster survivors; principles of psychosocial care; techniques of providing psychosocial care; normalization model; needs of the special groups in disaster and psychosocial care.

UNIT XIV

Capacity building: of governmental, non-governmental, community based organizations, and the local community, spectrum of care, inter sectoral and coordinated care provision between organizations, disaster preparedness, disaster sub-culture, disaster resilience role of social workers in disaster services. Policies and role of government sectors: role of state, central government, UN agencies, international organisations and NGOs, in disaster management services, India disaster management plan, quality assurance in disaster management – sphere, national health policy on disaster management, disaster survivors and human rights.

References:

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- **Pandey, B** (1998) Displaced Development: Impact on open cast mining on women. New Delhi: Friedrich Ebert Stiftung (India office).
- **Parasuraman, S.** (Ed), Organisation and Administration of Relief and Rehabilitation following Marathwada Earthquake, Mumbai: Tata Institute of Social Sciences., 1993
- **Parasuraman, S. and P.V. Unnikrishnan** (Eds) India Disasters Report: Towards Policy Initiative, New Delhi: Oxford University Press, 1999.

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- **Rajagopal S and Chari S.K.** (2003) Disaster management – a reader. National Institute of Advanced Studies, Bangalore.
- **Sainath, P** (1996). Everybody loves a good drought: Stories from India's poorest districts, New Delhi: Penguin.
- **Sekar, K , et al.,** (2002) Riots: Psychosocial care by Community Level helpers for Survivors.. Books for Change, Bangalore. In English and Gujarati. (English, Gujarati).
- **Sekar, K., et al.,** Psychosocial care in disaster management – My Workbook. NIMHANS Bangalore, CARE India New Delhi, 2004. (English, Tamil, Hindi).
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CORPORATE SOCIAL RESPONSIBILITY

FOURTH SEMESTER

Course Code	Title of the Course
34942	CORPORATE SOCIAL RESPONSIBILTIY

Course objectives

1. To understand the scope and complexity of corporate social responsibility (CSR).
2. To gain knowledge on the impact of CSR implementation on corporate culture, particularly as it relates to social issues
3. To acquire skills to frame CSR policies and practices appropriate to the Indian workplace

Outcomes of the course

- The aim of this course is to introduce the students to the concept of corporate social responsibility and its related aspects.

Contents:

BLOCK I: SOCIAL RESPONSIBILITY, EVOLUTION OF CSR, SUPPLY CHAIN RESPONSIBILITY, STAKEHOLDER ENGAGEMENT, CAUSE AND SOCIAL MARKETING, ENVIRONMENTAL RESPONSIBILITY

UNIT I

Social Responsibility: corporate social responsibility – meaning, definition and scope of CSR

UNIT II

Evolution of CSR – CSR, sustainability, public private partnerships, corporations role in climate change,

UNIT III

Supply chain responsibility, stakeholder engagement, cause and social marketing, environmental responsibility

BLOCK II: CSR AS ECONOMIC DEVELOPMENT AND CSR IN CULTURAL CONTEXT, STAKEHOLDERS AND PERSPECTIVES AND DESIGNING A CSR POLICY

UNIT IV

Socially responsible investing, sustainability reporting, transparency and human rights;
CSR as economic development and CSR in cultural context

UNIT V

Stakeholders and Perspectives - interest groups related to CSR – tools of CSR – business benefits of CSR.

UNIT VI

Designing a CSR policy – factors influencing CSR policy – managing CSR in an organization – role of hr professionals in CSR

UNIT VII

Global recognitions of CSR- ISO 14000 - SA 8000 - AA 1000 - codes formulated by UN global compact – UNDP, global reporting initiative.

BLOCK III: IMPLEMENTING CSR, CSR IN THE ECOLOGICAL ENVIRONMENT AND TATA POWER

UNIT VIII

Implementing CSR – CSR in the marketplace – CSR in the workplace – CSR in the community

UNIT IX

CSR in the ecological environment – case studies: lifebuoy soaps“ swasthya chetna, it’s e-choupal venture, titan industries limited

UNIT X

TATA power; tools for communicating CSR (skill building): social media, films and reports and developing strategic partnerships

.BLOCK IV: CSR IN INDIA, LEGAL PROVISIONS AND SPECIFICATIONS ON CSR

UNIT XI

CSR in India: an overview of CSR rules under companies Act, 2013

UNIT XII

Legal provisions and specifications on CSR – TCCI (TATA council for community initiatives).

BLOCK V: TATA MODEL ON CSR AND CSR AWARDS IN INDIA

UNIT XIII

TATA model on CSR – national CSR hub, TISS Mumbai – success and failure with CSR initiatives

UNIT XIV

CSR awards in India – role of social workers in CSR

References:

- **Anderson, Ray.** Mid-Course Correction: Toward a Sustainable Enterprise: The Interface Model. Chelsea Green Publishing Company, 1998.
- **Batstone, David.** Saving the Corporate Soul, and Who Knows, Maybe your Own. Jossey-Bass, 2003.
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URBAN COMMUNITY DEVELOPMENT

FOURTH SEMESTER

Course Code	Title of the Course
34943 A	URBAN COMMUNITY DEVELOPMENT

Course Objectives:

- To enable students to understand the unique nature of urban community.
- To develop sensitivity and communication for working with urban poor
- To provide knowledge on the government and voluntary efforts towards urban development.
- To equip students with specific skills and the techniques of working with urban communities.

Outcome of the course

- The aim of this course is to enable students to grasp the various issues concerning urban community development.

Contents

BLOCK I: URBAN COMMUNITY: MEANING, CHARACTERISTICS, CITY - MEANING, CLASSIFICATION, URBANIZATION & URBANISM

UNIT I

Urban Community: meaning, characteristics, rural urban linkages and contrast

UNIT II

City - meaning, classification, trends in urbanization process

UNIT III

Urbanization & Urbanism: meaning, theories of urbanization, characteristics of urbanism

BLOCK II: SLUMS – DEFINITION, APPROACHES, URBAN PROBLEMS AND URBAN COMMUNITY DEVELOPMENT

UNIT IV

Slums – definition, approaches, theories and classification and culture of slums

UNIT V

Urban problems: housing, drug addiction, juvenile delinquency, prostitution, and pollution.

UNIT VI

Urban Community Development: definition, concept, objectives and historical background

BLOCK III: APPROACHES, PRINCIPLES PROCESS AND METHODS OF URBAN COMMUNITY DEVELOPMENT AND URBAN DEVELOPMENT ADMINISTRATION

UNIT VII

Approaches, principles process and methods of urban community development, welfare extension projects of central social welfare board, urban development planning.

UNIT VIII

legislation related to urban development: urban land ceiling act, town and country planning act, nagarpalika act and Tamil Nadu slum clearance and improvement act) community planning, and community participation

UNIT IX

Urban Development Administration: national, state and local levels; structure and functions of urban development agencies

BLOCK IV: URBAN SERVICES AND URBAN DEFICIENCIES, ROLE OF VOLUNTARY AGENCIES IN URBAN COMMUNITY DEVELOPMENT, URBAN DEVELOPMENT PROGRAMMES

UNIT X

Urban services and urban deficiencies; metropolitan development authorities, Housing and Urban Development Corporation (HUDCO) and United Nations Centre for Human Settlement (UNCHS); housing board.

UNIT XI

Role of voluntary agencies in urban community development

UNIT XII

Urban Development Programmes: five year plans and urban development; Madras Urban Development Projects (MUDP) I & II

BLOCK V: TAMIL NADU URBAN DEVELOPMENT PROJECT, TAMIL NADU SLUM AREA ACT 1971

UNIT XIII

Tamil Nadu Urban Development project (TNUDP); Urban Basic Services Programmes (UBSP), Nehru Rozgar Yojana (NRY), etc

UNIT XIV

Tamil Nadu Slum Area (clearance and improvement) Act 1971, and problems in implementation of urban community development programmes; role of development worker – application of social work methods in urban development.

References:

- **Clinard, Marshall Barron.** Slums and community development: experiments in self-help. Vol. 8. New York: Free Press, 1966.
- **Diddee, Jaymala, and Vimla Rangaswamy.** "Urbanisation: trends perspectives and challenges." (1993).
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**PSYCHIATRIC SOCIAL WORK
FOURTH SEMESTER**

Course Code	Title of the Course
34943B	PSYCHIATRIC SOCIAL WORK

Objectives:

- To introduce the students to the concept of psychiatric social work.
- To highlight the historical development of psychiatric social work.
- To make students aware about psychiatric illnesses.
- To throw light on therapeutic intervention in psychiatric illness.
- To inform students about the scope of psychiatric social work practice.

Outcome of the course:

- The purpose of this course is to introduce the students to the concept of psychiatric social work and various other issues covered under it.

Contents:

**BLOCK I: PSYCHIATRIC SOCIAL WORK: DEFINITION AND CONCEPT,
CURRENT STATUS AS A FIELD OF SPECIALIZATION AND HISTORICAL
DEVELOPMENT OF PSYCHIATRY AS A FIELD OF SPECIALISATION**

UNIT I

Psychiatric Social Work: definition and concept, historical development in India and abroad

UNIT II

Current status as a field of specialization; case work, group work, and community organisation in the psychiatric services; limitations and difficulties faced in psychiatric social work practice; psychiatric epidemiologist in India.

UNIT III

Historical development of Psychiatry as a Field of Specialisation: attitudes and beliefs pertaining to mental illness in ancient, medieval and modern times;

**BLOCK II: CONCEPTS OF NORMALITY, ABNORMALITY AND MENTAL HEALTH,
PSYCHIATRIC ASSESSMENT AND PSYCHIATRIC ILLNESS**

UNIT IV

Concepts of normality, abnormality and mental health; classification of mental illness: diagnostic statistical Manual (DSM) iii-R; international classification of diseases (ICD)

UNIT V

Psychiatric assessment: interviewing, case history taking; sources of intake, mental status examination; formulation of psychosocial diagnosis

UNIT VI

Psychiatric Illness: neuroses, psychoses, organic and functional, culture bound syndromes, personality disorders, sexual deviations, alcoholism and drug dependence; mental handicap

BLOCK III: EPILEPSY: DEFINITION, TYPES, SUICIDE: CAUSES, INDICATIONS, PREVENTION AND SCHOLASTIC BACKWARDNESS

UNIT VII

Definition, classification, clinical types and causes, cerebral palsy: clinical types, causes, associated disabilities; epilepsy: definition, types, causes, management; ageing: biological, social and psychological problems

UNIT VII

Suicide: causes, indications, prevention; childhood disorders: behaviour disorders; eating, elimination, sleep and speech disorders; childhood psychoses: autism, schizophrenia;

UNIT VIII

Scholastic backwardness: symptoms, causes and management; attention deficit disorders

BLOCK IV: THERAPEUTIC INTERVENTION IN PSYCHIATRIC ILLNESS, BEHAVIOR THERAPY AND SCOPE OF PSYCHIATRIC SOCIAL WORK PRACTICE

UNIT IX

Therapeutic Intervention in Psychiatric Illness: psycho education, cognitive therapy, group psychotherapy, family therapy, marital therapy: scope and types;

UNIT X

Behavior therapy: principles and techniques, ECT, chemotherapy, psychosurgery and mega vitamin therapy; occupational therapy (purpose and concept)

UNIT XI

Scope of Psychiatric Social Work practice: roles and functions of a psychiatric social worker with regards to the problems of patients and their families in:

BLOCK V: ROLE OF THE SOCIAL WORKER IN REHABILITATION, PRINCIPLES AND MODELS OF PSYCHIATRIC REHABILITATION, CONCEPTS OF THERAPEUTIC COMMUNITY

UNIT XII

1) Psychiatric OPD'S 2) psychiatric specialty clinics 3) de-addiction centres, 4) child guidance clinics; rehabilitation of psychiatric patients: role of the social worker in rehabilitation - planning, mobilisation, reintegration of the patient in the family and community

UNIT XIII

Principles and models of psychiatric rehabilitation; role of the psychiatric social worker in team work.

UNIT XIV

concepts of : therapeutic community, partial hospitalisation, day care centers, half way homes, sheltered workshop and transitory homes; national mental health programme; district mental health programme

References:

- **Carson, Robert C., et al.**, *Abnormal psychology and modern life* . Scott, Foresman & Co, 1988.
- **Denzin, Norman K.** *Treating alcoholism: An alcoholics anonymous approach*. Vol. 46. Sage Publications, Inc, 1987.
- **Dickerson, Martha Ufford.** *Social work practice with the mentally retarded*. Free Pr, 1981.
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- **Verma, Ratna.** *Psychiatric social work in India*. SAGE Publications Pvt. Limited, 1992.

ORGANISATIONAL BEHAVIOR

FOURTH SEMESTER

Course Code	Title of the Course
34943C	ORGANISATIONAL BEHAVIOUR

Objectives:

- To know themselves and be able to recognize individual differences in others.
- To understand OB theories that influence individual and group behavior – perception, attitude formation, motivation, role theory etc.
- To understand how to form effective work teams.
- To understand how to change individual's attitude and motivation.
- To understand how to build effective team leadership.

Outcome of the course

- Organizational behavior focuses on developing an understanding of the individual and group level factors that influence employee attitudes and behavior at work.

Contents:

BLOCK I: FOCUS AND PURPOSE OF OB: DEFINITION, NEED AND IMPORTANCE, INDIVIDUAL BEHAVIOR, ORGANIZATIONAL BEHAVIOUR MODIFICATION

UNIT I

Focus and Purpose of OB: definition, need and importance of organisational behaviour nature and scope – framework – organisational behavior – models;

UNIT II

Individual behavior: personality – types – factors influencing personality – theories; learning: learning process – learning theories

UNIT III

Organizational behaviour modification; attitude: characteristics – components

BLOCK II: FORMATION; PERCEPTION: IMPORTANCE, GROUP BEHAVIOR, LEADERSHIP AND POWER, DYNAMICS OF ORGANIZATIONAL BEHAVIOR

UNIT IV

Formation; perception: importance – factors influencing perception; motivation – importance – types – effects on work behavior

UNIT V

Group Behavior: organization structure – formation – groups in organizations – influence – group dynamics – emergence of informal leaders and working norms – group decision making techniques – interpersonal relations – communication – control – Hawthorne studies

UNIT VI

leadership and power – meaning – importance – leadership styles – theories – leaders vs. managers – source of power – power centers – power and politics.

UNIT VII

Dynamics of Organizational Behavior: concept of organizational culture and climate – factors affecting organizational climate; job satisfaction – determinants – measurements

BLOCK III: ORGANIZATIONAL CHANGE, ORGANIZATIONAL DYNAMICS, FIEDLER'S CONTINGENCY MODEL

UNIT VIII

Organizational change – importance – change process – resistance to change – managing change; organizational effectiveness – perspective and application of transactional analysis

UNIT IX

Organizational Dynamics: leadership; process, styles, types and theories

UNIT X

Fiedler's contingency model, managerial grid, Redding's groups in organization: nature, cohesiveness, performance.

BLOCK IV: NORMS AND WORK DESIGN FOR GROUP AND GROUP DYNAMICS, HUMAN ENGINEERING - MAN, MACHINE SYSTEM

UNIT XI

Norms and work design for group (power, status, authority) and group dynamics

UNIT XII

Human engineering - man, machine system, human factors engineering and its applications structural design, job design and work design, Hawthorne experiments; employee counseling Japanese style of management and its applicability.

BLOCK V: ORGANIZATIONAL DEVELOPMENT: CONCEPT, CHARACTERISTICS, ORGANIZATIONAL CHANGE

UNIT XIII

Organizational Development: concept, characteristics – objectives process/phases, theory and practice, interventions: quality circles;

UNIT XIV

Organizational change: process, resistance to change, planning and implementation & theories of change.

Reference:

- **Arnold, Hugh J. & Daniel E. Feldman**, *Organisational Behaviour*, McGraw Hill, 1986.
- **Luthans, Fred**, *Organisational Behaviour*, New York, McGraw Hill, 1993
- **Hellriegel, Slocum and Woodman**. *Organizational Behaviour*. Thomas Learning, 2001.
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- **Edgar, Schein.**, *Organisational Psychology*, Englewood Cliffs New Jersey, Prentice Hall, 1970.

DEMOGRAPHY AND FAMILY WELFARE FOURTH

SEMESTER

Course Code	Title of the Course
34943D	DEMOGRAPHY AND FAMILY WELFARE

This course is to promote understanding of the changing norms of the social system and development opportunities throughout its cycle. It also aims to develop skills in identifying scope for reform and positive awareness for need of healthy family unit.

Objectives:

1. Understand the changing norms of the institution of family and variations in them with reference to the family social ecology.
2. Understand the dynamics of family interactions and developmental tasks through the family life span.
3. Develop positive attitude to support understanding the need of a healthy family unit.
4. Understand the demographic aspects of family in India. Family planning, family size preference and various approaches to family welfare planning.

Contents

BLOCK I: FAMILY AND MARRIAGE, IDEOLOGY OF FAMILY RIGHTS AND RESPONSIBILITIES AND IMPLICATIONS FOR THE FAMILY AND ITS MEMBERS

UNIT I

Family and Marriage: origin and evolution of family and marriage.

UNIT II

Ideology of family rights and responsibilities: normative family and marriage functions; social change and changes in family and marriage functions.

UNIT III

implications for the family and its members; dual earners families, single parent families, female headed households, childless families; family interactions; family development and family life cycle; family assessment: methods and its implications.

BLOCK II: DEMOGRAPHIC ASPECTS OF THE FAMILY IN INDIA, SOURCES OF DEMOGRAPHIC DATA AND FAMILY PLANNING

UNIT IV

Demographic aspects of the family in India: social inequalities and fertility behavior, trends of population growth; factors affecting population growth; consequences of population explosion.

UNIT V

Sources of demographic data, vital statistics: population structures and projection; theories of population.

UNIT VI

Family Planning: scope, concept of eligible couple and child protection rate; importance of population control

BLOCK III: FAMILY WELFARE PLANNING AND FIVE YEARS PLANS, POPULATION POLICY, POPULATION EDUCATION AND SEX EDUCATION AND FAMILY SIZE PREFERENCE AND CONTRACEPTIVE BEHAVIOUR

UNIT VII

Family welfare planning and five years plans; objectives, targets and achievements

UNIT VIII

Population policy, population education and sex education; physiology of reproduction: reproductive anatomy and physiology, menarche and menopause, fecundity, fertility, treatment of infertility; adoption.

UNIT IX

Family Size preference and contraceptive behaviour- methods of contraception: conventional and modern methods- male and female; temporary methods; behavioural methods; mechanical contraceptives.

BLOCK IV: CHEMICAL CONTRACEPTIVE, SEMI-PERMANENT METHODS, PERMANENT METHODS

UNIT X

Chemical contraceptive; semi-permanent methods: abortion and I.U.C.D.

UNIT XI

Permanent methods: vasectomy and tubectomy, advantages and disadvantages, medical termination of pregnancy act.

BLOCK V: APPROACHES TO FAMILY WELFARE PLANNING, TRAINING AND RESEARCH IN FAMILY WELFARE PLANNING, SOCIAL WORK TECHNIQUES IN PROMOTING PARENTHOOD

UNIT XII

Approaches to family welfare planning: welfare approach, clinical, extension and educational approach and cafeteria approach

UNIT XIII

Training and research in family welfare planning; mass media of communication; national and international agencies of family welfare planning services.

UNIT XIV

Social work techniques in promoting parenthood

References:

- Agarwala, S.N., India's Population Problem, Tata Mc Graw Hill, Bombay.
- Chandrasekaran, C.S, Population and Planned Parenthood, George Allen & Unwin, London. Chandrasekara, C,S., Population and Family Planning, Kitab Mahal, Allahabad.
- Danwantry, Rama Rao: population Resource and Environment, W.H Freeman & Co. Sanfrancisco.
- Enrlich, Paul, R., Ehrlich, Anne, H.: Planning your family, Mc Millan & Co., New York. Guffancher, Errest: Family Planning- Why, When & How, New book Co, Bombay.
- Usharani, D.Venkatesh Babu & Sudhakara Reddy, M.V, Economic value of children and fertility, discovery Publishing.

FIELD WORK PRACTICUM –IV

FOURTH SEMESTER

Course Code	Title of the Course
34944	FIELD WORK PRACTICUM – IV

Objectives:

- To be based on the student's specialization
- Agency placement for a minimum of 12 days.
- Content of Field work to be finalized between the concerned department and the placement agency according to the field of specialization.

General Guidelines for Community Development

1. Exposure to DRDA/Panchayat Union and Panchayat administration
2. Orientation to community based surveys/PRA
3. Organize one need based community programme
4. Practice of Social Work methods in Community Settings (Rural/Urban Slum/Tribal areas)
5. Knowledge of CD programmes.

General Guidelines for Medical and Psychiatric Social Work Students

1. Practice of Social Case Work with at least five clients
2. Practice of Social Group Work with at least two groups
3. One Community based programme.

General Guidelines for HRM Students

1. Exposure to welfare measures and programmes in industries.
2. Orientation to IR activities/Trade Union
3. Understanding of Organisation profile/Organisational Culture
4. Knowledge of labour legislations.

Evaluation (Concurrent Field Work for Semester IV)

Internal Evaluation – 15 marks

- | | | |
|------------------------------------|---|---------|
| 1. Practice of Social Work Methods | - | 5 marks |
| 2. Contribution to the Agency | - | 5 marks |

3. Understanding the Agency and its Functional services	-	5 marks
4. Attendance	-	5 marks
5. Reporting	-	5 marks
	Total	25 marks

External Evaluation – 75 marks

1. Understanding of the agency and its services	-	30 marks
2. Theoretical Knowledge	-	25 marks
3. Practice Skills	-	10 marks
4. Communication & Presentation	-	10 marks
5. Total		75 marks

Introduction:

This time is to be designed for the learner to integrate theory and practice to enhance competencies of social work practice and experience self in that role.

The internship must be for a minimum of one month in an organization related to the candidate’s specialization.

Objectives:

- a. Develop enhanced practice skill and integrate learning.
- b. Develop greater understanding of reality situations through involvement in day to day work.
- c. Develop appreciation of other’s efforts and develop sensitivity to gaps in the programme.
- d. Enhance awareness of self in the role of a professional social worker.

Evaluation:

Internal	–	40 marks
Agency evolution	–	30
marks Viva –voce by external examiner	–	30
marks		

(Note: Common viva-vice for concurrent field work and Block placement at the end of IV semester with 30 marks)

RESEARCH PROJECT WORK

FOURTH SEMESTER

Course Code	Title of the Course
34945	RESEARCH PROJECT REPORT

A learner should prepare and submit dissertation, under the guidance of a faculty. The learner is to engage meaningfully in the process of problem formulation, review of literature related to the study, preparing the research proposal, choosing an appropriate research strategy and developing instruments of data collection, collecting the data, processing, analysing and interpreting the data and preparing the research report.

The length of the research report may be between 60-75 pages and not exceeding 100 pages

Assessment Evaluation Viva Voce

1. PROJECT REPORT EVALUATION (Both Internal and External)

Plan for the Project Marks	-	20
Execution of the Plan/ Collection of data/ Organization of Material/Hypothesis, Testing etc and Presentation of Report marks	-	55
Individual Initiative marks	-	25
Total	-	100

Marks

M.A (Economics)

I. No	Course Code	Title of the Course	CIA Max.	ESE Max.	TOT Max.	C Max.
FIRST YEAR						
I Semester						
1	36211	Micro Economics - I	25	75	100	4
2	36212	Development Economics	25	75	100	4
3	36213	Indian Economy	25	75	100	4
4	36214	Industrial Economics	25	75	100	4
		Total	100	300	400	16
II Semester						
5	36221	Micro Economics - II	25	75	100	4
6	36222	Environmental Economics	25	75	100	4
7	36223	Fiscal Economics	25	75	100	4
8	36224	Research and Statistical Methods	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III Semester						
9	36231	Macro Economics - I	25	75	100	4
10	36232	Agricultural Economics	25	75	100	4
11	36233	International Economics	25	75	100	4
12	36234	Monetary Economics	25	75	100	4
		Total	100	300	400	16
IV Semester						
13	36241	Macro Economics - II	25	75	100	4
14	36242	Econometric Methods	25	75	100	4
15	36243	Entrepreneurship Development	25	75	100	4
16	36244	Computer Application in Economic Analysis	25	75	100	4
		Total	100	300	400	16
Grand Total			400	1200	1600	64

e. 2. Detailed Syllabi:

FIRST SEMESTER

Course Code	Title of the Course
36211	Micro Economics - I

Objectives:

On completion of the course the students will be able to

- ❖ Obtain in-depth knowledge on basic theoretical foundations in micro economics to the students.
- ❖ Explain the relationship between scarcity, choice and economic interaction.
- ❖ Clarify the relationship between demand and supply, the concept of free market equilibrium, and the role of price in allocating scarce resources.

BLOCK I: Analysis of Micro Economics

Unit-1: Scope of Micro Economics - Economics as a Positive Science - Criteria for Choosing among Alternative Theories - Dynamic Economic Analysis and Cobweb Theorem.

Unit-2: Partial and General Equilibrium Analysis.

Unit-3: Demand Analysis: Ordinal Utility Theory - Revealed Preference - Theory of Consumer's Surplus.

Unit-4: Theories of Search, Asymmetric Information, Lemons, Market Signaling.

Unit-5: The Efficient Market Hypothesis: Meaning - Types and Limitations.

BLOCK II: Theory of Production

Unit-6: Theory of Production: Introduction - The Law of Variable Proportions - The Law of Returns to Scale.

Unit-7: Production Function: Cobb Douglas and CES - Technical Progress and Production Function - Classification of Technical Progress, Embodied and Disembodied.

BLOCK III: Theory of Costs

Unit-8: Theory of Cost: Introduction - Meaning - its importance.

Unit-9: The Traditional Theory of Costs.

Unit-10: The Modern Theories of Costs.

Unit-11: Economies of Scale - Meaning - Importance - Elasticity of Costs.

BLOCK IV: Price and Output Determination under Different Market Structure

Unit-12: Price and Output Determination: Perfect Competition - Meaning - Characteristics.

Unit-13: Monopoly - Meaning - features - its characteristics

Unit-14: Oligopoly - Meaning - Characteristics.

References:

1. Jhingan, M.L. (2011), "Micro Economic Theory", Vikas Publishing House, New Delhi.
2. Dewett, K.K. (1985), "Modern Economic Theory", S. Chand and

Company, New Delhi.

3. Ahuja, H.L. (2004), “**Micro Economics**”, S. Chand and Company, New Delhi.
4. Koutsoyiannis, A. (2000), “**Modern Microeconomics**”, Macmillan Press, London.
5. Layard, P.R.G. and A.W. Walters (1978), “**Microeconomic Theory**”, McGraw Hill, London.
6. Sen, A. (1999), “**Microeconomics: Theory and Application**”, Oxford University Press, New Delhi.
7. Stigler, G. (1996), “**Theory of Price**”, PHI, New Delhi.
8. Varian, H.R. (2000), “**Microeconomic Analysis**”, W.W. Norton, New York.

Course Code	Title of the Course
36212	Development Economics

Objectives:

On completion of the course the students will be able to

- ❖ Familiarize the economic development issues.
- ❖ Apply the core concepts and quantitative tools to analyze real world problems and evaluate alternative economic policy proposals on economic development issues.
- ❖ Understand the concepts and theories in economic development.

BLOCK I: Economic Growth and Development

Unit-1: Concepts of Economic Growth and Development - Characteristics of Less Developed Countries - Obstacles to Development.

Unit-2: Growth-Meaning- Poverty and Income Distribution.

Unit-3: Human Development Index - Physical Quality of Life Index and Human Poverty Index.

Unit-4: Theories of Growth - I: Classical Approach Adam Smith, Marx and Schumpeter.

Unit-5: Theories of Growth - II: Neo - Classical Approach: Robinson, Solow, Kaldor and Harrod Domar.

Unit-6: Theories of Economic Development: Rostow - Rosenstein-Roden - Nurske, Hirschman - Sen's Capability.

Unit-7: Approach to Economic Development: Developed and Under Developed Countries.

BLOCK II: Development Strategies

Unit-8: Development Strategies - I: Neumann's Growth Model and Modifications.

Unit-9: Development Strategies - II: Choice of Goods and Techniques.

Unit-10: Development Strategies - III: Mathur's Wage Goods - Light and Heavy Strategies.

BLOCK III: Planning Models

Unit-11: Planning Models - I: Introduction - Meaning - Objectives - Characteristics.

Unit-12: Planning Models - II: Feldman, Mahalanobis - Leontief's Input - Output Model.

Unit-13: Planning Models - III: Vahit Brahmananda - Raj - Sen - Chakravarthy.

BLOCK IV: Planning Techniques

Unit-14: Planning Techniques: Meaning - Concepts - its importance.

References:

1. Ray, Debraj (1998), "**Development Economics**", Oxford University Press, New Delhi.
2. Kuznets, Simon (1966), "**Economic Growth, Rate Structure and Spread**", Yale University Press, New Delhi.
3. Todaro, Michael. P. (1998), "**Economic Development**", Harlow: Addison Wesley Longman,
4. Szirmai, Adam (2005), "**Dynamics of Socio Economic Development - An Introduction**", Cambridge University Press, New Delhi.
5. Meir, Gerald (2003), "**Leading Issues in Economic Development**", Oxford University Press, New Delhi.
6. Nehar, Phillips, A. (1971), "**Economic Growth and Development: A Mathematical Introduction**", John Wiley, New York.

Course Code	Title of the Course
36213	Indian Economy

Objectives:

On completion of the course the students will be able to

- ❖ Equip with concepts involved in econometric theory.
- ❖ Acquaint with the performance of different sectors of the Indian economy and the policy framework governing them.
- ❖ Obtain insights into the past, present and future functioning of the Indian economy.

BLOCK I: Indian Economy and Structures

Unit-1: Indian Economy at the time of Independence - Planning - Objectives - Rationale and Performance - Adoption of Mixed Economy Model.

Unit-2: Indian Economy at New Economic Reform: Appraisal of Economic Reforms.

Unit-3: Growth and Structure of Indian Economy: Growth of National Income and Per Capita Income - Personal Income in India.

Unit-4: Demographic features: Population growth - Urbanization in India.

Unit-5: Inter-State Disparities in the Pattern of Development - Poverty and Unemployment.

BLOCK II: Economy and Sectoral Development

Unit-6: Agriculture: Pattern of Growth of Indian Agriculture - Regional Variations in Agricultural Development - WTO and Indian agriculture - its impact.

Unit-7: Industry: Trends in growth and Structure of Indian Industry - Impact of New Economic Policy on Indian industry.

BLOCK III: Financial Sector

Unit-8: Financial Sector: Nationalisation of Banks - Financial Sector Reforms; Interest Rate Policy.

Unit-9: Financial Institutions: Role of Financial Institutions - Money and Capital Markets; Working of SEBI in India.

Unit-10: Public Finance: Recent Trends in Public Debt and Fiscal Deficits - Centre and State Financial Relations - Review of Monetary Policy of RBI.

BLOCK IV: External Sector

Unit-11: External Sector: Trade Policy during Pre and Post Reform Period.

Unit-12: Exchange Rate: Meaning - Concepts - Exchange Rate Policy and Foreign Exchange Management Act (FEMA).

Unit-13: External Debt - Meaning - its importance - External Debt in India.

Unit-14: Foreign Direct Investment and Multinational Corporations in India (MNCs).

References:

1. Acharya, S. and M. Rakesh (2011), “**India’s Economy: Performance and Challenges**”, Oxford University Press, New Delhi.
2. Jayaraj, D and S. Subramanian (2010), “**Poverty, Inequality and Population**”, Oxford University Press, New Delhi.
3. Mahendradev, S. (2010), “**Inclusive Growth in India**”, Oxford University Press, New Delhi.
4. Kurien, C.T. (1978), “**Poverty, Planning and Social Transformation in India**”, Allied Publishers, New Delhi.
5. Rangarajan, C. (2000), “**Perspectives on Indian Economy - A Collection of Essays**”, UBSPD Publishers Distributors, New Delhi.
6. Misra S.K. and V.K. Puri, (2001), “**Indian Economy**”, Himalaya Publishing House, Mumbai.

Course Code	Title of the Course
36214	Industrial Economics

Objectives:

On completion of the course the students will be able to

- ❖ Understand the key questions on the internal organisation of firms.
- ❖ Analyse various aspects of strategic interaction between firms and the determinants of industrial structure.
- ❖ Develop ability to apply economic models of firm behaviour to analyse questions in business strategy, competition policy and regulation.

BLOCK I: Basics of Industrial Economics

Unit-1: Meaning of Industrialization - Role of Industry in Economic Development.

Unit-2: Organisation of a Firm: Meaning - Concepts - Objectives - Characteristics.

Unit-3: Classification of Industries: Small, Medium and Large Scale Industries in India.

BLOCK II: Theories of Industries and Location

Unit-4: Theories of Industry: Hoffman, Chenery and Gerschenkron.

Unit-5: Theories of Industrial Location: Weber, Sargant Florence - Factors Affecting Industrial Location.

BLOCK III: Industrial Economics and Market Structure

Unit-6: Market Structure - Meaning - Different types of Market Structure - Sellers Concentration.

Unit-7: Product Differentiation - Meaning of Product - Characteristics of Product - Entry Conditions.

Unit-8: Economies of Scale - Meaning - Short and Long Economies of Scale- Profitability and Innovation.

Unit-9: Growth of the Firm - Size and Growth - Growth and Profitability of the Firm - Constraints on Growth.

Unit-10: Productivity: Meaning - Efficiency of Firm and Industry.

Unit-11: Capacity Utilisation: Concept - Measurement - its importance.

Unit-12: Industrial Policy: Industrial Policy in India - Industrial Performance after Independence.

Unit-13: Public and Private Sectors: Meaning - Role - Characteristics - Importance of Public and Private Partnership in Developing Country - Limitations.

BLOCK IV: Industrial Technology

Unit-14: Industrial Technology: Role of Technology for Industrial Development - India as a Global Hub - Transfer of Technology - LPG - Recent Central Government Initiative to Encourage Industrial Sector.

References:

1. Clarke, Roger (1985), “**Industrial Economics**”, Basil Blackwell, New York.
2. Barthwal, R.R. (1995), “**Industrial Economics**”, New Age International, New Delhi.
3. Smith, D.M. (1971), “**Industrial Location: An Economic and Geographic Analysis**”, John Wiley, New York.
4. Ahluwalia, I. J. (1985), “**Industrial Growth in India**”, Oxford University Press, New Delhi.

SECOND SEMESTER

Course Code	Title of the Course
36221	Micro Economics - II

Objectives:

On completion of the course the students will be able to

- ❖ Understand microeconomic theories.
- ❖ Develop analytical techniques and research skills.
- ❖ Understand the nature of theoretical research and analysis in microeconomics.
- ❖ Develop skills in applying theoretical analysis to topics such as market failure and uncertainty, general equilibrium analysis, the role of government and behavioural economics.

BLOCK I: Theories of Demand, Firm, Rent and Distribution

Unit-1: Demand Analysis: Characteristics of Goods Approach (Lancaster), Consumer's Choice Involving Risk (N-M hypothesis) - Friedman-Savage, Markowitz Hypotheses; Indirect Utility Functions (Duality Theory).

Unit-2: Theories of the Firm: Baumol's Sales Revenue Maximization - Williamson's Model of Managerial Discretion - Marris Model of Managerial Enterprise.

Unit-3: Theories of Rent and Profits: Concepts of Rent - Ricardian Theory of Rent - Profit as a Dynamic Surplus - Innovation and Profit.

Unit-4: Neo-Classical Approach - Marginal Productivity Theory - Product Exhaustion Theorem; Technical Progress and Factor Shares.

Unit-5: Theory of Distribution under Imperfect Product and Factor Markets, Macro Theories of Distribution Ricardian, Marxian and Kalecki.

Unit-8: Theories of Demand: Slutsky's Theorem - Revision of Demand Theory by Hicks - Consumer's Choice involving Risk and Uncertainty.

BLOCK II: Market Theories

Unit-6: Market Theories of Firm-I: The Duopoly Models of Cournot, Bertrand, Edgeworth and Chamberlain.

Unit-7: Market Theories of Firm - II: Kinked Demand Curve and Stackleberg's Solutions and Collusion (Cartels and Mergers) - Price Leadership - Bain's Limit Pricing Theory.

BLOCK III: Pricing, Break Even Analysis, Profit and Game Theory

Unit-9: Pricing: Methods of Pricing - Cost Plus Pricing, Going Rate Pricing, Limit Pricing, Market Skimming and Penetration Pricing.

Unit-10: Break Even Analysis: Meaning, Assumptions, Determination of Break-Even Point (Simple Problems), and limitations.

Unit-11: Profit Maximization, Marginal Revenue, Short-Run Supply by Price -Taking Firm, Profit Functions and its Properties.

Unit-12: Game Theory: Basic Concepts, Dominant Strategy-Equilibrium, Nash Equilibrium, Repeated and Sequential Games.

BLOCK IV: Theories of Welfare

Unit-13: Theories of Welfare Economics - I: Pareto Optimal Conditions; Paretian Welfare Criterion - Value Judgment, Social Welfare Function; Compensation Principle.

Unit-14: Theories of Welfare Economics - II: Theory of Second Best - Arrow's

Impossibility Theorem, Rawl's Theory of Justice.

References:

1. Koutsoyiannis, A. (2008), "**Modern Micro Economics**", Palgrave Macmillan Press Ltd., 2nd Revised Edition.
2. Ahuja H.L. (2007), "**Advanced Economic Theory**", S. Chand & company Ltd., New Delhi.
3. Chopra P.N. (1981), "**Advanced Micro Economics**", Kalyani Publications, Ludhiana, 11th Edition.
4. Intriligator, M.D. (1971), "**Mathematical Optimization and Economic Theory**", Prentice Hall, Englewood Cliffs, New Jersey.
5. Layard, P.R.G. and A.A. Walters (1978), "**Microeconomic Theory**", McGraw Hill, New York.
6. Little, I.M.D. (1957), "**Critique of Welfare Economics (2nd edition)**", Oxford University Press, Oxford.
7. Mathur, P.N. and R. Bharadwaj (1967), "**Economic Analysis in the Input-Output Framework with Indian Empirical Exploration**", Input-Output Research Association of India, Pune.
8. Sen, A. (1999), "**Microeconomics: Theory and Applications**", Oxford University Press, New Delhi.
9. Diamond, P. and M. Rothschild (1978), "**Uncertainty in Economics**", Academic Press, New York.
10. Arrow J and F. Hahn (1971), "**General Competitive – Analysis**", North Holland, Amsterdam.

Course Code	Title of the Course
36222	Environmental Economics

Objectives:

On completion of the course the students will be able to

- ❖ Gain knowledge in environmental pollution, types of pollution, monitoring and enforcement of environmental regulation.
- ❖ Understand basic approaches to environmental policy, regulation and effluent, India's environmental policy, law on environmental protection and pollution control.
- ❖ Discuss use values: option values and non-use values, valuation methods-based on observed market behavior.

BLOCK I: Economics and Environment

Unit-1: Economics and Environment: Definition - Scope and Significance.

Unit-2: Ecology and Ecosystem: Meaning-Nature - Its Relationship.

Unit-3: Environmental Economics and the Environmental Policy.

Unit-4: Economics of Resources: Forest Resources - Water Resources - Mineral Resources.

BLOCK II: Environment and Natural Resources

Unit-5: Management of Natural Resources: Conservation and Management of Natural Resources.

Unit-6: Natural Resource Policy in India.

BLOCK III: Environment and Energy

Unit-7: Energy: Definition - Sources and Classification - its Importance.

Unit-8: Types of Energy: Renewable and Non-renewable Sources of Energy - Conventional and Non-Conventional.

Unit-9: Energy Resources: Direct and Indirect Energy - Atomic Energy - Energy Scenario in India.

BLOCK IV: Environment and Law

Unit-10: Pollution: Meaning - Types - Pollution Control - Pricing Emissions - Regulation.

Unit-11: Fiscal Technique in Pollution controls - Effluent Charges and Subsidies Comparison.

Unit-12: International Environmental Policy: Introduction - its importance - International Conference on Environment - International Agreements - Stockholm Conference.

Unit-13: Human Environment - International Conferences related with Human Environment - Recommendations.

Unit-14: Environment Laws in India: Introduction - Different types of Law - its importance.

References:

1. Rabindra, N. B. (2001), "Environmental Economics - An Indian Perspective", Oxford University Press, New Delhi.
2. Charles S. P. (2000), "Economics and Global Environment", Cambridge University Press, New Delhi.
3. Barry C. F. and K. F. Martha (2004), "Environmental Economics", McGraw Hills, Irwin.
4. Jhingan, M.L. (2011), "Environmental Economics: Theory", Management and Policy, Vrinda Publications, New Delhi.
5. Kolstad, C.D. (2012), "Environmental Economics", Oxford University Press, New Delhi.
6. Sankar, U. (2001), "Environmental Economics", Oxford University Press, New Delhi.

Course Code	Title of the Course
36223	Fiscal Economics

Objectives:

On completion of the course the students will be able to

- ❖ Develop the conceptual framework, theoretical dimensions and policy underpinnings of core public economics.
- ❖ Understand the basic ideas of taxation and budgetary theory, classical and modern approaches and recent concepts on budgets.

BLOCK I: Introduction to Fiscal Economics

Unit-1: Public Finance: Meaning and Scope - Its uses.

Unit-2: Role of Public Finance in the Economy - Public Finance and Private Finance.

Unit-3: The Principle of Maximum Social Advantage in Public Finance.

Unit-4: Principles of Public Expenditure: Classification - Causes and Effects of Public Expenditure with Reference to India.

Unit-5: Public Revenue Sources: Distinction between Tax Revenue and Non - Tax Revenue.

BLOCK II: Taxation

Unit-6: Taxation: Meaning - Sources of Taxation - Impact of Taxation.

Unit-7: Fiscal Policy: Meaning - Fiscal Policy in a Developing Economy - Financial Administration and Principles of Budgeting.

Unit-8: Budget: Characteristics of a Good Budget - Preparation of a Budget - Budgeting in India.

Unit-9: Deficit Financing: Objectives - Need - Effects - Limitations - Deficit Financing in India.

BLOCK III: Fiscal Federalism

Unit-10: Fiscal Federalism - Theory of Fiscal Federalism.

Unit-11: Center and State Financial Relations - Problems of Center and State Financial Relations in India, Reports of Finance Commissions in India.

BLOCK IV: Tax Systems in India

Unit-12: Indian Tax System: Revenue of the Union, States and Local Bodies.

Unit-13: Major Taxes in India: Tax Revenue and Non - Tax Revenue of Center, State and Local Bodies.

Unit-14: Reforms in Direct and Indirect Taxes - Trends in Revenue and Expenditure - Public Debt in the Post Reform Period.

References:

1. Goode, R. (2000), “**Government Finance in Developing Countries**”, TMH, New Delhi.
2. Jha. R. (1999), “**Modern Public Economics**”, Routledge, London.
3. Musgrave, R.A. and P.B. Musgrave (1970), “**Public Finance in Theory and Practice**”, McGraw Hill, Tokyo.
4. Atkinson, A.B. and J.E. Stiglitz (2000), “**Lectures on Public Economics**”, TMH, New York.
5. Herber, B.P. (2001), “**Modern Public Finance**”, Richard D. Irwin, Homewood.

Course Code	Title of the Course
36224	Research and Statistical Methods

Objectives:

On completion of the course the students will be able to

- ❖ Develop understanding about the purpose and principles of scientific research; steps in scientific research and types of research.
- ❖ Understand about the basic framework of research process, identification and formulation of research problem.
- ❖ Apply the tools and method of data collection: Interview method, focus of group discussion, participatory rural appraisal. Comprehensive knowledge on writing a research report.
- ❖ Explain the basic concepts of Descriptive and Inferential Statistics.
- ❖ Practice data entry and processing using excel data downloading from internet and its conversation into application.

BLOCK I: Introduction of Research

Unit-1: Meaning of Research - Objectives of Research - Approach to Research - Significance of Research.

Unit-2: Types of Research: Research in Social Science - Research Design - Features of a Good Research Design.

BLOCK II: Basics of Research

Unit-3: Identifying a Research Problem - Formulation of Research Problem.

Unit-4: Hypothesis: Concept - Formulation of Hypothesis.

Unit-5: Sample Survey Different Types - Merits and Demerits - Schedule and Questionnaire.

Unit-6: Data Analysis: Measurement and Scaling Techniques - Processing and Analysis of Data.

BLOCK III: Application of Statistics in Economics

Unit-7: Descriptive Statistics - I: Measures of Central Tendency - Mean - Median - Mode - Measures of Dispersion - Range - The Semi-Interquartile Range (SIR) - Variance / Standard Deviation.

Unit-8: Descriptive Statistics - II: Skewness and Kurtosis - Pearson's Measure of Skewness - Bowley's Measure of Skewness - Kurtosis.

Unit-9: Applications in Economics - I: Correlation: Meaning - Types - Properties of the Correlation Co-efficient - its usefulness.

Unit-10: Applications in Economics - II: Regression - Meaning - Types - Difference between Correlation and Regression.

Unit-11: Least Squares: Meaning - Specification and Estimation of Simple Linear Regression, Confidence Intervals and Tests of Hypotheses, Prediction.

BLOCK IV: Report Writing

Unit-12: Report Writing - Steps - Bibliography and References.

Unit-13: Interpretation and Presentation: Meaning - Techniques of Interpretation - Significance of Presentation.

Unit-14: Research Report: Quality of a Good Research Report.

References:

1. Kothari, C.R. (1985), **“Research Methodology”**, Wiley Eastern, New Delhi.
2. Cochran, W. G. (1977), **“Sampling Technique”**, John Wiley, New York.
3. Goode, W.J. and P.K. Hatt (1952), **“Methods in Social Research”**, McGraw Hill, New York.
4. Wilkinson, T.S. and P.L. Bhandarkar (1994), **“Methodology and Techniques of Social Research”**, Himalaya Publishing House, New Delhi.
5. Babies, Earl (2006), **“The Practice of Social Research”**, Wadsworth Publishing, New Delhi.

THIRD SEMESTER

Course Code	Title of the Course
36231	Macro Economics - I

Objectives:

On completion of the course the students will be able to

- ❖ Identify the determinants of various macroeconomic aggregates such as national income, measurement of national income.
- ❖ Discuss the linkages between the classical and Keynesian theory.
- ❖ Evaluate the consequences of Post – Keynesian development in Macro Economics.
- ❖ Describe the supply side economics particularly J.B Say’s supply side economics.

BLOCK I: Introduction to Macro Economics

Unit-1: Introduction - Meaning - Definitions - Nature and Scope - Importance - Micro and Macro Economics.

Unit-2: National Income Accounting: Meaning - Concepts - Measurement -Importance of National Income Data - Difficulties in its Measurement.

BLOCK II: Theories of Employment

Unit-3: Theory of Employment - I: Classical Theory of Employment and Income.

Unit-4: Theory of Employment - II: Say’s Law of Market.

Unit-5: Theory of Employment - III: Keynesian Theory of Employment - Determinants of Equilibrium Level of Employment - Aggregate Demand and Aggregate Supply Function.

BLOCK III: Different Function in Macro Economics

Unit-6: Consumption Function: Meaning - Theories of Consumption Function -

MEC. **Unit-7:** Investment Function - Meaning - Types - Determinants of Investment

- MEI. **Unit-8:** Multiplier: Meaning - Characteristics-Static and Dynamic Multipliers.

Unit-9: Accelerator: Meaning - Characteristics - Induced Investment and Accelerator.

Unit-10: Employment Multiplier: Meaning - The Interaction Principle - Basics of Income and Employment Multiplier - Keynesian Revolution and its Application to Less Developed Countries.

BLOCK IV: Macro Economic Analysis and Models

Unit-11: Macro Analysis: Post Keynesian - Meaning - its importance.

Unit-12: General Equilibrium of Monetary and Real Sector.

Unit-13: Macro Economic Model: Contribution of Hicks, Hanson: IS-LM Diagram.

Unit-14: Macro Economic Policy: Meaning - Objectives and Importance of Macro Economic Policy.

References:

1. Mithani, D.M. (2003), “**Modern Economic Analysis**”, Himalaya Publishing House, Mumbai.
2. Ahuja, H.L. (2000), “**Macro Economics**”, S. Chand and Company, New Delhi.
3. Vaish, M.C. (2005), “**Macro Economic Theory**”, Vikas Publishing House, New Delhi.
4. Shapiro, Edward (2008), “**Macro Economic Analysis**”, Galyotia Publications, New Delhi.

course Code	Title of the Course
36232	Agricultural Economics

Objectives:

On completion of the course the students will be able to

- ❖ Understand the differences between traditional and modern agriculture, impact of green revolution, sustainable agriculture and organic farming.
- ❖ Provide depth knowledge in dynamics of cropping pattern, determinant of cropping intensity and recent trends in agriculture.
- ❖ Create awareness about source of agriculture finance, relationship between public and private investment.
- ❖ Understand the characteristics of primary agricultural markets in India, marketing agencies and channels.

BLOCK I: Introduction to Agricultural Economics

Unit-1: Nature and Scope of Agricultural Economics - Role of Agriculture in Economic Development - Interdependence between Agriculture and Industry.

Unit-2: Cropping Pattern: Meaning - importance - Agricultural Development under Five Year Plans - Green Revolution.

BLOCK II: Economic Decisions in Agriculture

Unit-3: Economic Decisions in Agriculture Production: Cobb Douglas, CES - its usefulness.

Unit-4: Production Relationships: Factor - Product, Factor - Factor, Product - Product Relationship.

Unit-5: Capital Formation in Agriculture - Public and Private Investment - Cost Relationships and Profit Maximisation.

Unit-6: Farm Management: Meaning – importance - Agricultural Price Determination.

Unit-7: Crop Insurance: Needs - importance - Subsidy - PDS - Food Security.

BLOCK III: Agricultural Marketing

Unit-8: Agricultural Marketing - I: Meaning - Marketed and Marketable Surplus - Distress Sales - Defects of Markets.

Unit-9: Agricultural Marketing - II: Types - Regulated Markets - Co-operative Markets - Market Intelligence - Futures Trading.

BLOCK IV: Issues in Indian Agriculture

Unit-10: Land Reforms.

Unit-11: Agricultural Credit: NABARD - Co-operative Credit - Rural Indebtedness.

Unit-12: Agricultural Labour: Meaning - Characteristics of Agriculture Labourers- Agricultural Labour and Wages.

Unit-13: National Agricultural Policy 2000 - National Commission on Farmers.

Unit-14: WTO and Indian Agriculture - DOHA Agreement on Agriculture.

References:

1. Sadhu and Singh, (2007), **“Fundamentals of Agricultural Economics”**, Himalaya Publishing House, New Delhi.
2. Bilgrami, S.A.R. (2010), **“An Introduction to Agricultural Economics”**, Himalaya Publishing House, New Delhi.
3. Bhalla, G.S. and G. Singh, (2012), **“Economic Liberalisation and Indian Agriculture”**, Sage Publications, New Delhi.
4. Bhalla, G.S. and G. Singh (2001), **“Indian Agriculture: Four Decades of Development”**, Sage Publications, New Delhi.
5. Saini, G.R. (1979), **“Farm Size, Resource, Use Efficiency and Income Distribution”**, Allied Publishers, New Delhi.

Course Code	Title of the Course
36233	International Economics

Objectives:

On completion of the course the students will be able to

- ❖ Know about International trade theory: concepts, importance, and intervention between International Trade - patterns of production, trade and investment.
- ❖ Understand the concepts and importance of terms of trade, concepts of foreign exchange rate, foreign trade multiplier; currency convertibility.
- ❖ Describes about International Trade and predicts patterns of production, trade and investment.

BLOCK I: Introduction to Foreign Trade

Unit-1: Foreign Trade: Need - Meaning - Nature - Inter Regional and International Trade.

BLOCK II: Theories of International Trade

Unit-2: Theories of International Trade: Adam Smith - Ricardo, Haberler and Heckscher - Ohlin Theory.

Unit-3: Terms of Trade: Concepts of Terms of Trade, Determinants of Terms of Trade - Static and Dynamic Gains from Trade - Terms of Trade between Agriculture and Industry.

Unit-4: Free Trade: Meaning - Case for and against Free Trade.

Unit-5: Protection: Meaning - Arguments for and Against Protection - The Effect of Growth on Trade.

Unit-6: Technical Progress and Trade - Meaning of Technical Progress - Neutral, Capital Saving, Labour Saving.

Unit-7: Trade Policy: Tariff - Quota - Trade problems of Developing Countries.

BLOCK III: International Organisations

Unit-8: International Organizations - I: UNCTAD - GATT and Tokyo Declaration.

Unit-9: International Organizations - II: WTO - Import Substitution and Export Promotion - its Importance.

Unit-10: Economic Orders: North South Dialogue and New International Economic Order - Usefulness.

BLOCK IV: Balance of Payments, Trade and Export Assistance

Unit-11: Balance of Payments (BoP): Meaning, Structure, Importance of Balance of Payments.

Unit-12: Balance of Trade (BoT): Meaning, Disequilibrium in BoP & BoT - Causes for Disequilibrium in BoP.

Unit-13: Measures for Correcting Disequilibrium, Relationship between BoP & BoT.

Unit-14: Strategies of International Business: International Marketing Operations. Exporting, Importing and Counter Trade - Export and Import Finance - Export Assistance.

References:

1. Carbaugh, R. J. (2008), “**International Economics**”, Thomson South Western, New Delhi
2. Salvatore, D. (2007), “**International Economics**”, Wiley India, New Delhi.
3. Krugman P. R. and M. Obsfeld (2006), “**International Economics: Theory and Policy**”, Addison Wesley, New Delhi.
4. Soderston, B. and G. Reed (1999), “**International Economics**”, McMillan Press

Course Code	Title of the Course
36234	Monetary Economics

Objectives:

On completion of the course the students will be able to

- ❖ Understand the core aspects of monetary economy: how monetary phenomena and policies are determined, and how they interact with the rest of the macro economy.
- ❖ Develop an understanding of the monetary transmission mechanism, whereby decisions made by the monetary authorities concerning money supply and money demand.
- ❖ Explain uncertainties faced by policy-makers and how policy makers may deal with these.
- ❖ Provide an exposition about the various core monetary theories, policies and its usefulness in real world situation.

BLOCK I: Introduction to Monetary Economics

Unit-1: Money - An Introduction Barter system and its defects - Evolution of Money - Meaning - Definitions - Functions, Advantages and Disadvantages. Methods of Note Issue.

Unit-2: Role of Money - I: Capitalist and Socialist and Mixed Economies.

Unit-3: Role of Money - II: The Role of Money in Classical and Keynesian Models.

BLOCK II: Theories of Monetary Economics

Unit-4: Demand for Money - I: The Classical Approach - The Keynesian - Post Keynesian Developments - Baumol's Approach to Transaction Demand for Money.

Unit-5: Demand for Money - II: Tobin's Theory of Speculative Demand for Money - The Portfolio Optimization Approach - Friedman's Restatement of Quantity Theory of Money.

Unit-6: Supply of Money: Financial Intermediaries and the Supply of Money - The Nature and Functions of Financial Intermediaries - The Supply of Money.

Unit-7: Non-Banking Financial Intermediaries - The Classical System and the Neutrality of Money.

Unit-8: Theories of Money: The Patinkin System and the Neutrality of Money - Monetarists vs. Keynesians with Empirical Evidence.

Unit-9: Inflation - Market Theories of Inflation and Non-Market Theories of Inflation - Monetary Policy, Different types and Tools of Monetary Controls - Monetary Reforms in India (since 1991).

BLOCK III: Financial Institutions

Unit-10: International Monetary Systems: IMF - World Bank - ADB.

Unit-11: Indian Monetary Systems: RBI - NABARD - RRB - Co-operative Banks.

Unit-12: Bank Websites: Recent Publications on the websites of Finance Ministry of India.

BLOCK IV: Reforms in Monetary Systems

Unit-13: Financial Committee: Narasimhan Committee Report and Raguram Rajan's Committee Report on Monetary Reforms.

Unit-14: Recent Reforms in Monetary systems in India: Demonetisation of Higher order Money in 2016 and its implications.

References:

1. Jhingan, M.L. (2012), "Monetary Economics", Vrindha Publications (P) Ltd, New Delhi.

2. Chandler, L.V (1977), “**Economics of Money and Banking**”, S.Chand Ltd, New Delhi.
3. Kurihara, KK(1950), “**Monetary Theory and Public Policy**”, Norton Digitised, 2007.
4. Ghosh and Rama Ghosh, (1985), “**Fundamentals of Monetary Economics**” , 2nd Edition, Himalaya Publishing House, Mumbai.
5. Laidler, David (1993), “**The Demand for Money**”, 4th edition. Harper Collins, New York.

FOURTH SEMESTER

Course Code	Title of the Course
36241	Macro Economics - II

Objectives:

On completion of the course the students will be able to

- ❖ Evaluate the consequences of basic macroeconomic policy options under differing economic conditions within a business cycle.
- ❖ Understand the linkages between technological progress and economic growth, saving rate and investment in human capital.
- ❖ Describe the fiscal policy of the government.
- ❖ Evaluate the consequences of basic macro-economic problems such as inflation and unemployment.

BLOCK I: Macro Economic Theories

Unit-1: Theories of Demand for Money: Quantity Theory and Keynes Approach. Baumol and Tobin Contributions and Friedman's Restatement of Quantity Theory.

Unit-2: Economic Growth: Meaning and Theories. Harrod - Domar Theory and Neo-Classical Theory.

Unit-3: The Open Economy: The Mundell - Fleming Model with a Changing Price Level.

BLOCK II: Theories of Consumption Spending and Hypotheses

Unit-4: Theories of Consumption Spending: Absolute, Relative, Permanent Income and Life - Cycle Hypotheses.

Unit-5: Rational Expectation Hypothesis.

BLOCK III: Analysis of Macro Economics

Unit-6: Trade Cycles: Meaning, Definition, Theories of Trade Cycles - Short Term and Long Term Cycles.

Unit-7: Inflation - Phillips Curve Analysis - Samuelson and Solow - The Natural Rate of Unemployment Hypothesis.

Unit-8: The Phillips Curve - The Aggregate Supply Curve - Short-Run Phillips Curve and Aggregate Supply Curve - Shifting of Short-Run Phillips Curve - Long-Run Phillips Curve.

Unit-9: Balance of Payments: Components, Disequilibrium and Adjustments - Currency Crisis.

Unit-10: Business Cycles: Meaning - Types - Features - Phases.

BLOCK IV: Macro Economic Policies

Unit-11: Macro Economic Policies: Income Policy - Neo-Classical Policy - Austrian Policy - Post - Keynesian Policy.

Unit-12: India's Macro Economic Policies: Jana Dhana Yajana - MUDRA - Start up - Skill India - Make in India - MGNREGA and Financial Inclusion.

Unit-13: Central Bank and its Functions - Money supply in India.

Unit-14: Contemporary Macroeconomic Debates in India and the World.

References:

1. Ackley, G. (1978), "Macroeconomics: Theory and Policy", Macmillan, New York.

2. Bober, S. (1971), **“Economics of Cycles and Growth”**, Wiley Eastern, New Delhi.
3. Branson, W.H. (2005), **“Macroeconomic Theory and Policy”**, Affiliated East-West Press, New Delhi.
4. Levacic, R. and A. Rebman (1982), **“Macroeconomics”**, Macmillan, London.
5. Mueller, M.G. (ed.) (1977), **“Readings in Macroeconomics”**, Wiley and Sons, New York.
6. Ott, D., P. Ott, and S. Yoo (1975), **“Macroeconomic Theory”**, McGraw Hill, New York.
7. Patinkin, D. (1965), **“Money, Interest and Prices”**, Harper and Row, New York.
8. Jhingan, M.L. (2014), **“Monetary Economics”**, Vrinda Publications (p) Ltd., 7th Edition, New Delhi.
9. Narendra Jadhav (1999), **“Monetary Economics of India”**, Macmillan, London.
10. Hanson, J.L. (1966), **“Monetary Theory and Practice”**, Macdonald of Evans Ltd., London.
11. Ahuja, H.L (2010), **“Macroeconomic Theory and Policy”**, S. Chand & Co Ltd, New Delhi.
12. Wallace C. Peterson, Paul S. Estenson (1992), **“Income, Employment, Economic Growth”**, W.W. Norton Co.

Course Code	Title of the Course
36242	Econometric Methods

Objectives:

On completion of the course the students will be able to

- ❖ Equip with concepts involved in econometric theory.
- ❖ Understand the quantitative relations between variables.
- ❖ Estimate the relation between variables and to give inferences for decision making.

BLOCK I: Basic Econometrics

Unit-1: Definition, Nature and Scope of Econometrics, Goals of Econometrics.

Unit-2: Statistical Concepts: Normal Distribution; Chi-square, t and F-Distributions; Estimation of Parameters; Properties of Estimators; Testing of Hypotheses.

BLOCK II: Linear Regression

Unit-3: Simple Linear Regression: Estimation of Model by Method of Ordinary Least Squares; Properties of Estimators; Goodness of Fit; Tests of Hypotheses; Scaling and Units of Measurement.

Unit-4: Multiple Linear Regression Model: Estimation of Parameters; Properties of OLS Estimators; Goodness of Fit - R^2 and Adjusted R^2 .

BLOCK III: Econometric Analysis

Unit-5: Violations of Classical Assumptions: Consequences, Detection and Remedies Multicollinearity; Heteroscedasticity; Serial Correlation.

Unit-6: Specification Analysis: Omission of a Relevant Variable; Inclusion of Irrelevant Variable; Tests of Specification Errors.

Unit-7: Panel Data Models: Methods of Estimation; Fixed Effects Model; Random Effects Model.

Unit-8: Regression on Dummy Variables: Nature of Dummy Variables - The Use of Dummy Variables in Seasonal Analysis and in Combining Time Series and Cross Sectional Data.

Unit-9: The Problem of Inference - The Normality Assumption - Hypothesis Testing about Individual Partial Regression Coefficients - Testing the Overall Significance of the Sample Regression.

Unit-10: Linear Restrictions: Testing Joint Hypothesis - Problems and Application using STATA.

Unit-11: Testing of Hypothesis: Assumptions - Specification - Testing of Hypothesis - Prediction - Applications.

BLOCK IV: Econometric Methods and Software Packages

Unit-12: Estimation Methods: Single Equation and Systems Estimation Methods - Numerical Problems.

Unit-13: Dynamic Econometric Models: Nature and Preliminary Analysis of Economic Time Series, Integration, Tests of Stationary, Unit Root Test, Non-Stationary and the Problem of Spurious Regression.

Unit-14: Introduction to Econometric Software Package GRETL; E-VIEWS; STATA (any one).

References:

1. Damodar, N. Gujarati; D.C. Porter and Sangeetha Gunasekar (2013), “**Basic Econometrics (Fifth Edition)**”, McGraw Hill India, New Delhi.
2. Johnston, J. (1997), “**Econometric Methods**”, McGraw-Hill, 4th Ed, New Delhi.
3. Koutsoyiannis, A. (1977), “**Theory of Econometrics (2nd Edn.)**”, The Macmillan Press Ltd., London.
4. Maddala, G.S. (1997), “**Econometrics**”, McGraw Hill, New York.
5. Jack Johnston and John Dinardo (1997), “**Econometric Methods (PB)**” McGraw Hill Higher Education, New York.
6. Pindyck, R.S and D.L. Rubinfeld (1998), “**Econometric Models and Economic Forecasts**”, Irwin McGraw Hill, 4th Edition, New York.
7. Intrilligator, M.J; R.G. Bodkin and Cheng Hsiao (1996) “**Econometric Models :Techniques and Applications**”, 2nd Edition, Prentice Hall, United States.
8. Goldberger, A.S (1998), “**Introductory Econometrics**”, Harvard University Press, Cambridge.

Course Code	Title of the Course
36243	Entrepreneurship Development

Objectives:

On completion of the course the students will be able to

- ❖ The main purpose of studying entrepreneurship development is to widen the base of entrepreneurship by development, achievement, motivation and entrepreneurial skills among the students.
- ❖ Identify opportunities to become entrepreneur.
- ❖ Develop ability to perceive new patterns from different points of view
- ❖ Develop courage to make independent decisions in entrepreneurial business.

BLOCK I: Introduction to Entrepreneurship

Unit-1: Entrepreneur: Meaning and Importance - Evolution of term Entrepreneurship-Factors Influencing Entrepreneurship - Characteristics of an Entrepreneur - Difference between Entrepreneur and Entrepreneurship.

Unit-2: Types of Entrepreneur - According to Type of Business - According to Use of Technology - According to Motivation - According to Growth - According to Stages.

BLOCK II: Entrepreneurship Creativity and Management

Unit-3: Creativity: Creativity and Entrepreneurship - Steps in Creativity.

Unit-4: Innovation and Inventions: Using Left Brain Skills to Harvest Right Brain ideas - Legal Protection of Innovation - Entrepreneurial Motivation: Maslow's Theory - Herzberg's Theory - McGrigor's Theory.

Unit-5: Skills of an Entrepreneur: Decision Making and Problem Solving - Training.

Unit-6: Entrepreneurial Culture - Entrepreneurial Society - Women Entrepreneurship and Rural Entrepreneurship.

Unit-7: Definition - Nature - Scope and Functions of Management - Evolution of Management Thought - Classical School - Neo-classical School - Human Relation School and Modern School of Thought.

BLOCK III: Market Assessment, Strategic and Financial Analysis

Unit-8: Market Assessment - Needs - Tools and Techniques - Methods of Market Survey - Sources of Market Information - Presentation of Market Survey Report.

Unit-9: E-commerce - Types of Application - Architecture - Opportunities and Problems - Recent Trends and Advancement in E-commerce.

Unit-10: Historical Perspective - Global Indian Entrepreneurs - Institutions - Modern Entrepreneurs.

Unit-11: Strategic Growth - Need for Strategic Planning - Understanding the Growth Stage - Unique Managerial Concerns of Growing Enterprise, Valuation Concerns.

Unit-12: Financial Analysis - Ratio Analysis - Investment Process - Break Even Analysis - Profitability Analysis, Social Cost - Benefit Analysis - Budget and Planning Process - Applicability of the Factories Act.

BLOCK IV: Institution for Entrepreneurial Development

Unit-13: Institutions for Entrepreneurial Development - Role of Constancy Organisations - Role of Financial Institutions - Bank Finance to Entrepreneurs Entrepreneurship development

- Role of development in financial institutions.

Unit-14: Current State and National Level Promotional Schemes for Establishment of New Entrepreneurship.

References:

1. Tandon, B.C. (1975), “**Environment and Entrepreneur**”, Chugh Publications, Allahabad.
2. Siner A David (1985), “**Entrepreneurial Megabucks**”, John Wiley and Sons, New York.
3. Srivastava S. B. (1992), “**Practical A Guide to Industrial Entrepreneurs**”, Sultan Chand and Sons, New Delhi.
4. Chandra, Prasanna (1994), “**Protect Preparation, Appraisal, Implementation**”, Tata McGraw Hill, New Delhi.
5. Paudey, I.M. (1996), “**Venture Capital -The Indian Experience**”, Prentice Hall of India Pvt Ltd., New Delhi.
6. Holt, D.H. (1991), “**Entrepreneurship-New Venture Creation**”, Prentice Hall of India Pvt Ltd., New Delhi.

Course Code	Title of the Course
36244	Computer Application in Economic Analysis

Objectives:

On completion of the course the students will be able to

- ❖ Understand the basics of computer and its applications
- ❖ Operate simple programs, including some statistical procedures
- ❖ Use graphical & tabular methods for examining univariate and bivariate (Variable relationship)
- ❖ Develop the necessary skills for applying SPSS in research

BLOCK I: Basics of Computers

Unit-1: Basics of Computer: Characteristics of Computer System, Evolution of Computers - Generations, Types of Computers.

Unit-2: Basic Components of a Digital Computer - Control Unit, ALU, Input / Output Devices and Peripheral Devices.

Unit-3: Computer Languages: Machine Language, Assembly Language and High Level Language.

Unit-4: Operating System and Netware: DOS, UNIX, Windows, LAN and WAN.

BLOCK II: Basic Concepts and Operating Systems

Unit-5: Basic Concepts of Internet: Modem, e-mail, Websites, Address, Domain, Protocols, Types of Accounts, Search Engines, Browsing Web, Telnet, Usenet, AOL.

Unit-6: Online Sources of Data: Books - Journals - Working Papers - Reports - Newspapers.

Unit-7: Basics of MS-Office: MS-Word: The MS-Word Window, Entering, Selecting, Copying and Moving Text, Applying Fonts and Indenting Text, Creating Numbering and Bullets, Finding and Replacing Text, Spelling, Grammar and Thesaurus, Creating Page Headers and Footers, Constructing Tables and Mail Merge.

Unit-8: MS-Excel Skills: Entering and Editing Cell Entries, Working with Numbers, Changing the Worksheet Layout, Formatting Text, Borders and Color, Printing in MS-Excel, Using Functions and References, Naming Ranges.

BLOCK III: Data Analysis

Unit-9: Data Analysis: Preparation of Frequency Distribution, Calculation of Mean, Standard Deviation, Coefficient of Variation, Correlation Coefficient, Regression Coefficients, Trend Line using Method of Least Squares and Moving Averages.

Unit-10: SPSS: Basic Structure of an SPSS Data File - Using Data Edition - Reading Spread Sheet Data - Reading a Database - Reading Text Data.

Unit-11: Data Definition: Preparation of Code Book, Data List, Begin Data, End Data, Defining Variable Type, Variable Tables, Value Labels, Missing Labels.

Unit-12: Output Display: Interpretation of Output - Transfer of Data Display Formats - Creating and Edition Graphs - Tables and Diagrams, Bar, Line, Pie, Scatter, Histogram.

BLOCK IV: Computer Applications to Economics

Unit-13: Application to Economics: On-line Banking; ATM's Electronic Stock Exchange; Electronic Trading; Data Sharing and Dissemination; Electronic Transaction; Document Delivery; Authentication and Validation Transaction Processing.

Unit-14: E-Business: Electronic Trading and Marketing; On-line Shopping and Malls, B2B, B2C, Models, Document and Transaction Security and Digital Signature; Integrated Transaction on Mobile Platforms. E-Commerce Applications in India.

References:

1. Gujarati, D.N. (2012), "**Basic Econometrics**" (2nd Ed.), McGraw Hill, New Delhi.
2. Johnston, J. (1991), "**Econometric Methods**", McGraw-Hill, New Delhi.
3. Krishnamurthy, E.V. and S.K. Sen (1976), "**Computer-Based Numerical Algorithms**", Affiliated East-West Press, New Delhi.
4. Lipschultz, M and S. Lipschultz (1981), "**Theory and Problems of Data Processing**", Schaum's Outline Series, McGraw Hill, New York.
5. Mishra, S.K. and J.C. Binwal (1991), "**Computer Applications in Social Science Research**", Vikas Publishing House, Delhi.
6. Rajaraman, V. (2010), "**Fundamental of Computers**", Prentice Hall of India, New Delhi.
7. Sanders, D.H. (1983), "**Computer Today**", McGraw Hill, Singapore.
8. Sinha, P.K. (1992), "**Computer Fundamentals**", BPB Publications, New Delhi.
9. Wirth, N. (1988), "**Algorithms Plus Data Structures Equal Programs**", Prentice Hall of India, New Delhi.

M.A(J &MC)

Sl.No.	Course Code No.	Name of the Course	CAI max	ESE max	Total max	C
I SEMESTER						
1	30911	Introduction to Journalism & Mass Communication	25	75	100	4
2	30912	Evolution of Media	25	75	100	4
3	30913	Photography	25	75	100	4
4	30914	Reporting & Editing	25	75	100	4
TOTAL			100	300	400	16
II SEMESTER						
5	30921	Theories of Communication	25	75	100	4
6	30922	Advertising & Public Relations	25	75	100	4
7	30923	Audio Production	25	75	100	4
8	30924	Video Production	25	75	100	4
TOTAL			100	300	400	16
III SEMESTER						
9	30931	Graphic Communication	25	75	100	4
10	30932	Communication Research Methods	25	75	100	4
11	30933	Media Laws and Ethics	25	75	100	4
12	30934	Internship(One Month)	25	75	100	4
TOTAL			100	300	400	16
IV SEMESTER						
13	30941	Development Communication	25	75	100	4
14	30942	New Media Communication	25	75	100	4
15	30943	Corporate Communication	25	75	100	4
16	30944	Project Work / Dissertation	25	75	100	4
TOTAL			100	300	400	16
TOTAL CREDITS			400	1200	1600	64

FIRST SEMESTER

Course Code	Title of the Course
30911	INTRODUCTION TO JOURNALISM AND MASS COMMUNICATION

OBJECTIVES OF THE PAPER

- To explain the definitions of communication.
- To discuss the concept of Mass Media.
- To explain the concept of Journalism.
- To Know the various Indian news agencies

Possible Outcomes of the course:

- The course will give a clear ideas about Journalism and Mass Communication
- The Study of Mass media and various concept of Journalism.
- The course will make the learners knowing about communication, human communication skill and handling the various media device.

BLOCK I: Communication and Various Models of Communication

UNIT I

Communication: Definitions
Communication and Society
Types of Communication

UNIT II

Basic models of Communication
Linear model
Non-linear model

UNIT III

Communication, Culture and Media Literacy
Internet and Society
Impact on Politics
Education
Business and Culture.

UNIT IV

The human communication process
A review of some basic models and the ingredients.

BLOCK II: Journalism and its Ethics

UNIT V

The concept of Journalism
The functions of press
Press freedom
Responsibility and the theories of Press

UNIT VI

Current trends in Journalism
Press codes and ethics of Journalism
A code of ethics for the Indian Press.

UNIT VII

Press Commissions and Committees
The First and Second Press Commission reports

UNIT VIII

Reports of Chanda committee
Varghese Committee
Joshi committee
Karanth working group etc.

BLOCK III: Media and its Functions and Types

UNIT IX

Media for Mass Communication
Print media
Electronic media
Radio
Television and New Media

UNIT X

Prasar Baharati Bill
FM and Community Radio
DTH
Cable Revolution.

UNIT XI

Mass Media institutions in India
Government Media Units – Akashvani, Doordarshan, PIB, DAVP etc.
Press Registrar of India,
Press council of India

BLOCK IV: Indian News Agencies and its Status in India

UNIT XII

Indian News agencies
Professional organizations as INS, AINEC, IFWJ, PRST, AAI, ILNA etc.,
Media educational institutions.

UNIT XIII

Introduction to mass media
Meaning of mass media
The concept of Mass Media
The influence of technology on the means of communication

UNIT XIV

A discussion of the characteristics of individual mass medium
Mass Media in India

Present status of mass media
Advantages of mass media
Limitations of mass media

REFERENCE BOOKS:

1. Baran, Stanley J. Introduction to Mass Communication: Media Literacy and Culture. Boston: McGraw Hill, 2002.
2. McQuail, Denis. (1994). Mass Communication: An Introduction (2nd). Newbury Park, CA: Sage.
3. David K. Berlo, The Process of Communication, Holt Rhinehart and Winston, 1960. 4. Sean Macbride "Many Voices, One World".
4. Keval J.Kumar, Mass Communication in India, Vikas Publication,s New Delhi, 1994
5. John Comer and et. al, Communication Studies, Longman, London, 1981.

Course Code	Title of the Course
30912	EVOLUTION OF MEDIA

OBJECTIVES OF THE PAPER

- To understand the growth and functions of press in India after Independence
- To discuss the growth and development of Radio
- To learn the importance of folk media.
- To state and explain the origin and development of television

Possible Outcomes of the course:

- The course will give a clear idea about the history of press in India.
- The Study of folk media growth and its development.
- The course will make the learners knowing about the importance of News papers and magazines

BLOCK I: Communication System and its Development

UNIT I

Early communication systems in India
 Development of printing
 Early efforts to publish newspaper in different parts of India.

UNIT II

History of the print media and evolution and development of printing technology in India and World; various types of print media, nature, concepts, scope; Content making for print media, reach, advantages and importance.

UNIT III

Newspaper and Magazines in the nineteenth century
 First war of Indian Independence and the press
 Issues of freedom,
 Political and press freedom.

UNIT IV

Invention and Development of Radio medium,
 Radio Broadcasting since its inception in world and India,
 Radio Technology,
 Establishment of radio stations.

BLOCK II: Different Types of Media and its Development

UNIT V

Television – origin and development, nature, scope, audience, genre, functions of television; Ownership pattern, debate on autonomy; BBC model of ownership, control and

programming – commercial and public service, state and private sectors’ expansion; potential for future development.

UNIT VI

The press in India after Independence
Social, political and economic issues
The role of Indian press problems
Prospects of Indian press

UNIT VII

Introduction to Radio
Growth and Development of Radio
AM and FM,
Vividh Bharati, Gyanvani, Community Radio
Satellite Radio, Ham Operators
Evaluation of Content in Radio.

UNIT VIII

Introduction to Television
Growth and development of Television
Terrestrial and Satellite
Digital divide

BLOCK III: Television and Film Development in India

UNIT IX

Introduction to Television
Evolution of content in Television,
Entertainment News
Public interaction
Commercialism

UNIT X

Introduction to Films
Early efforts
Film as a mass medium
Historical development of Indian films
Silent era of films
Talkies as a new approach in films

UNIT XI

Indian cinema after Independence
Parallel cinema and commercial cinema
Meaning and concept of documentaries
Issues and problems of Indian cinema.

BLOCK IV: Folk Media and Traditional India

UNIT XII

Folk media – Traditional media in India – regional diversity – content – form – character – utility – evaluation – future.

UNIT XIII

Exploring the New media

Internet

Growth and development of Internet communication

Online journalism

E-Publishing.

UNIT XIV

Definitions of Media and Mass Media;

Traditional Forms of Media

Signs, wood carving, Sound, drawings, sculptures

Folk Media – Songs, Drama, Puppet Shows, Story Telling etc.

REFERENCE BOOKS:

1. R.K.Ravindran, “Media in Development Arena”, Indian Pub & Distributors 2000.
2. Straubhar, Larsoe, “Media Now”, Thomson Wordsworth, 4th Edition,2004
3. KevalJ.Kumar, “Mass Communication in India”, Jaico Publishing Co.2003.
4. J.K.Sharma, “Print Media and Electronic Media – Implications for the future”, Authors Press, New Delhi, 2003.
5. The Evolution of Media Kindle Edition by Michael A. Noll (Author), Rowman & Littlefield Publishers, 2013

Course Code	Title of the Course
30913	PHOTOGRAPHY

OBJECTIVES OF THE PAPER

- To understand the different tools of photography
- To explain the reflection and refraction of light
- To define the various techniques in composition
- To understand the concept of photo journalism and colour photography

Possible Outcomes of the course:

- The course will give a clear ideas about different tools of photography
- The Study of the concept of photo journalism and colour photography
- The course will make the learners knowing about various techniques in composition

BLOCK I: Photography and its Instruments

UNIT I

Photography- Meaning, Definition
 History of Photography
 Tools of Photography
 Camera- Parts of Camera (Shutter, Apertures, Lens, Films)
 Types of Camera.

UNIT II

Composition: Need for composing a picture, rule/ conventions of composition, elements of composition and their role/ relevance in communication a message.

UNIT III

Pin-hole, box, folding and DSLR, Large and Medium format cameras, Single lens reflex (SLR) and twin lens reflex (TLR).

UNIT IV

Principal focus and focal length, size of the image, speed and power of the lens, depth of field, angle of view and perspective.

BLOCK II: Different Types of Images and Camera Accessories

UNIT V

Photographic Optics: Reflection and refraction of light, Dispersion of Light through a glass prism, Lenses, Different kinds of image formation

UNIT VI

Miniature, Sub-miniature and instant camera, Choice of camera and sizes, rising , falling, cross movements and swing back

UNIT VII

Lens, Aperture, Shutters, Various types and their functions, view-finders and focusing system.

UNIT VIII

Film chamber: Exposure counter, self timer, tripod stand, panning tilt head, lens hood, cable release, extension tubes and bellows, tele-converter and changing bag.

BLOCK III: Natural Sources and Photography

UNIT IX

Natural source- Natural Source, the sun, Nature and intensity of the sunlight at different times of the day, different weather condition types of light sources used

UNIT X

Artificial light sources- nature, intensity of different types of light sources used : Photo flood lamp, Halogen lamp, Barn doors and shoot, flash unit : Bulb flash and electronic flash.

UNIT XI

Photographing people, Portrait and still, wildlife, environment, sports, landscape, Industrial disasters.

BLOCK IV: Photography and Impact of Technology

UNIT XII

Photography for advertising

Conflicts war political

Social photography.

UNIT XIII

News values for pictures, photo essays- photo features: qualities for photo-journalism, picture magazines – colour photography,

UNIT XIV

Impact of technology

Practical

Field assignment and their evaluation.

REFERENCE BOOKS:

1. The encyclopedia of photography (3rd edn.) (1993) by Richard Zakia, LeatieStroebe, Focal Press, London.
2. The Manual of Photography (2000) by Ralph E Jacobson/Geoffrey G Attridge/Sidney F Ray, Focal Press
3. Ninth Edition. Understanding Digital Photography by Joseph A .Ippolito, Thomson Press, New Delhi, 2005.
4. The Manual of Photography (2000) by Ralph E Jacobson/Geoffrey G Attridge/Sidney F Ray, Focal Press,
5. The Photography Book, Jeffrey, Ian, Phaidon Press, London 200

Course Code	Title of the Course
30914	REPORTING & EDITING

OBJECTIVES OF THE PAPER

- To impart knowledge on news and reporting.
- To describe about the different types of reporting.
- To develop the knowledge on editing of news paper and magazine.
- To enhance the knowledge on the organization of the editorial department.

Possible Outcomes of the course:

- The course will give a clear ideas about different types of reporting.
- The Study of impart knowledge on news and reporting.
- The course will make the learners knowing about on the organization of the editorial department.

BLOCK I: Journalism and News

UNIT I

Meaning of Journalism
 Definitions of Journalism
 Functions and role of Journalism

UNIT II

Journalist,
 Role of a Journalist,
 Journalism ethics and standards,
 Qualities of a Journalist.

UNIT III

Concept of news,
 Definition of news,
 Types of news.

UNIT IV

News Values,
 Elements of news,
 Functions of news,
 News Sources.

BLOCK II: Reporting and its Different Types

UNIT V

Concept of reporting,
 Types of reporting,
 Reporting Skills

UNIT VI

Covering News beat,
 Political reporting,

Business Reporting,
Sports Reporting,
Science & Technology reporting,
Education Reporting.

UNIT VII

Investigative and Interpretative reporting,
Development reporting,
Reporting with new technologies.

UNIT VIII

Journalistic Writing Techniques,
Writing Book review,
Film Review and Sports Review.

BLOCK III: Editing and Structure of Newspaper

UNIT IX

Editing – meaning,
concept and significance,
contemporary trends in print journalism.

UNIT X

Introduction
Contemporary presentation styles
Editing of news paper and magazines.

UNIT XI

Structure of News Paper organization – Editorial, Management,
Production,
Circulation,
Marketing.
Human resource development

BLOCK IV: Editing Principles and Editorial Department

UNIT XII

Editing – principles,
Tools & techniques,
Role and function of copy desk,
Art of copy editing,
Steps and precautions in editing.

UNIT XIII

Difference between editing of newspapers,
Magazines & web editing,
Computerized editing.

UNIT XIV

Function and organization of the editorial department of a news paper, functions of Editor, Resident editor, Asst.editor, News editor, Chief sub- editor, Sub – editor, and Chief reporter etc.

REFERENCE BOOKS:

1. D.bruse, Newspaper writing and reporting for today's media(2001) Italy
2. Susan, News paper journalism (2004) Pape
3. Keeble,Richeard, News paper handbook(2001) Routledge, london
4. Sourin, Banergji, News Editing in Theory and Practice (2001) K.P Bagchi and Company, Calcutta.
5. Aggarwal, Vir Bala, Essentials of Practical Journalism,(2006) Concept Publishing Company , New Delhi.
6. Verma M.K News Reporting and Edition

SECOND SEMESTER

Course Code	Title of the Course
30921	THEORIES OF COMMUNICATION

OBJECTIVES OF THE PAPER

- To understand the Historical development of Media Theories
- To develop and understanding of Strength and Limitation of basic Theories of Communication
- To comprehend how Mass Communication theories are accepted the society.
- To critically evaluate theories as applied to practical Mass Communication problems.

Possible Outcomes of the course:

- The course will give a clear ideas about Historical development of Media Theories
- The Study of understanding of Strength and Limitation of basic Theories of Communication
- The course will make the learners knowing about critically evaluate theories as applied to practical Mass Communication problems.

BLOCK I: Communication and Communication Models

UNIT I:

Introduction to Communication
Meaning of Communication
Importance of Communication
Features of Communication
Scope of Communication

UNIT II

Functionalist
Marxist
Critical Political Economy
Feministic perspectives

UNIT III

White's Gate – Keeping model,
Socialist, Culturalist,
Psychoanalytical
Behavioral Theories.

UNIT IV

Normative Theories: Authoritarian Media Theory,
Libertarian or free press Media theory

BLOCK II: Different Types of Communication Theories

UNIT V

Psychological and Sociological Communication theories: Cultivation theory,

Uses and Gratification theory,
Gestalt theory of motivation

UNIT VI

Cultural dimensions, mass media as cultural industry, cultural norms theory, effects theory, Source Theories, Connectional background, Agent setting (Mc Comband Shaw) Merits and demerits.

UNIT VII

Message theories
Diffusion of Innovation,
Propaganda theory

UNIT VIII

Channel theories:
Gate keeping,
Technological determinism,
Social shaping of technology

BLOCK III: Functions of Communication and Concept

UNIT IX

Audience Theories
Social Categories theory
Social Learning theory

UNIT X

Scope and functions of communication in the society-social aspects in shaping communication behavior.

UNIT XI

Media audiences
Public and public opinion
Mass media and public opinion
Media in society

BLOCK IV: Different Types of Communication

UNIT XII

Introduction
Political Communication
Political Socialization
Communication Politics.

UNIT XIII

Introduction
Western and Eastern Perspectives
Differences
Western Theories in the Indian Context

UNIT XIV

Evolution of Communication
Theories in developing countries

Alternative communication
Indian experience
Participatory

REFERENCE BOOKS:

1. Theories of Communication A Short Introduction Armand Mattelart - University of Paris,France, Michèle Mattelart - University of Haute-Bretagne Sage, 1998
2. Blunder, J. and E. Katz, The Uses of Mass Communication. Thousand Oaks, CA: Sage, 1974.
3. Richard Collins, Media, Culture and Society, Sage Publication, New Delhi 1986
4. Keval J. Kumar, Mass Communication in India, Jaico Publishing Housing, Bombay, 1991
5. Duai R.& Manonmani .T, Culture and Communication: New Perspectives, Galgotia Publication, New Delhi, 1997.

Course Code	Title of the Course
30922	ADVERTISING & PUBLIC RELATIONS

OBJECTIVES OF THE PAPER

- To explain the perception of advertising in the marketing process.
- To understand the functions of advertising.
- To acquire the knowledge about structure of an advertisement.
- To realize the importance of advertising campaigns and
- To recognize the professional organizations in advertising.

Possible Outcomes of the course:

- The course will give a clear ideas about the perception of advertising in the marketing process.
- The Study of the knowledge about structure of an advertisement.
- The course will make the learners knowing about the professional organizations in advertising.

BLOCK I: Advertising and Types of Advertising

UNIT I

Introduction
 Evolution and growth of advertising
 Definitions of advertising

UNIT II

Introduction
 Structure of an Advertisement
 Advertisement Design

UNIT III

Introduction
 Types of advertising
 Advertising media.

UNIT IV

Visualization,
 Headlines,
 Body copy,
 Visuals copy appeal etc.

BLOCK II: The Code of Advertising and Public Relation

UNIT V

Introduction
 Copy writing techniques
 Fundamentals of Arts in the layout
 design

UNIT VI

Introduction
 Professional organizations in advertising

The code for commercial advertising on AIR

UNIT VII

Introduction

The code of commercial advertising on Doordarshan

The code of advertising practice of the Advertising Standard Council of India.

UNIT VIII

Public Relations:

Definitions

Public Relations and publicity

BLOCK III: Public Relations and its Development Policies in India

UNIT IX

Nature and Scope of Public Relations.

Qualifications

Responsibilities of a Public Relations Officer.

UNIT X

Introduction

PR and Public Opinion

History and Development of PR in India

UNIT XI

Introduction

Role and functions of PR in management

PR Policy.

BLOCK IV: Structure of PR and its Trends

UNIT XII

Structure and functions of a PR,

Department in Government,

Public

Private Sectors

UNIT XIII

Introduction

Functions of a PRO

Media relations

Employee relations.

UNIT XIV

PR Professional Organizations

New trends in PR

Ethics of Public relations

REFERENCE BOOKS:

1. Melvin L. DeFluer, Everette .L Dennis : Understanding Mass Communication – A Liberal arts perspective – (Publishers – Houghton Mifflin Company – Boston, Toronto – year – 1994).

2. Keval J. Kumar : Mass Communication in India – (Publishers - Jaico Publishing house New Delhi – year -2002 – III Edition).
3. Reubean Ray : Communication Today – Understanding Creative skill (Publishers - Himalaya Publishing House, Mumbai – year – 1997).
4. Angela Wadia : Communication and Media – Studies in Ideas, Initiatives and institutions – (Publishers - Kanishka Publishers New Delhi – year – 1999).
5. Y.K.D'souza, : Communication today and tomorrow – (Publishers -Discovery Publishing House New Delhi. Year – 1999).
6. C.S. Rayadu : Media and Communication Management – (Publishers Himalaya Publishing House, Mumbai – year – 1998 – III Edition).
7. Larry L. Barker, Deborah L. Barker, : Communication –(Publishers - Allyn and Bacon, Massachutes – Year – 1993 Sixth Edition)

Course Code	Title of the Course
30923	AUDIO PRODUCTION

OBJECTIVES OF THE PAPER

- To Understand the developments and advances in radio journalism
- To acquire Knowledge in radio formats
- To gain vivid knowledge in news writing and presentation
- To be Competent in production management.

Possible Outcomes of the course:

- The course will give a clear ideas about Knowledge in radio formats
- The Study of vivid knowledge in news writing and presentation
- The course will make the learners knowing about Competent in production management.

BLOCK I: Radio and its Various Programmes

UNIT I

History of Radio - Developments and Advances in Radio Journalism and techniques since inception – Radio in today’s Media Scenario; Future of Radio. Introduction to acoustics; different kinds of studios vis-à-vis programme formats; varieties of Microphones; the broadcast chain;

UNIT II

Recording & Transmission systems; Modulation(Am & FM) Antennas, Receivers Amplifiers, High Fidelity systems; Multi-track recording technique; Stereo; Recording & Editing Consoles.

UNIT III

Radio Formats- Writing & Production skills vis-avis Diverse Formats; The spoken word/ Interviews/Discussions /Symposia – Radio plays / Radio Features & Documentaries/Music on Radio,

UNIT IV

Special Audience programmes on Radio- Programmes on Radio- Programme for Children, Women, Youth Senior citizens, Rural Folk, Industrial workers, Defense personnel.

BLOCK II: News Writing and its Principles

UNIT V

News Writing and Presentation- Principals of News writing in a public service broadcasting organization, as contrasted with News in private Radio

UNIT VI

Principals of News presentation; News features; Professionals and Freelance stringers reporting for Radio; Disaster coverage News Bulletins.

UNIT VII

Production Management- Economic Production Management; Principles of Production Planning and Course of Production; Pre-production, Production and Post-production; Management of personnel Financial and Technical resources;

UNIT VIII

Budgetary planning and control-Direct and Indirect costs; Human resource Development; fixed variable factors in planning subject- research; conducive production conditions.

BLOCK III: Development of Radio and Recording Software

UNIT IX

Introduction

Innovative Developments In Radio Communication

Information Service Programmes on Radio

UNIT X

Introduction

Community Radio;

Local Radio;

Campus Radio;

Private FM Radio stations.

UNIT XI

Introduction

Application of Sound in Studio formats

Introduction to various Recording Softwares in the industry

BLOCK IV: Sound Recording and Digital Technology

UNIT XII

Introduction

Application of Sound recording in Radio Stations.

UNIT XIII

Sound spectrum and frequencies

History of recording and formats

UNIT XIV

Digital technology and advancements - Creating files and naming them – Recording – Using EQ, DYNMS, SFX, and Reverb – Source Selection – Cleaning and Editing - Elements of music recording - Mixing Pre and Post Mastering

REFERENCE BOOKS:

1. Louie Tabing, “How to do community radio” UNESCO, 2002.
2. Carole Fleming, “The Radio Handbook”, 2nd edition, Routledge, 2002.
3. Jan Maes and March Vereammen “Digital Audio Technology”, 4th Edition Focal Press, 2001.
4. Ministry of Information and Broadcasting, Govt. of India, Annual Report 2002-03.
5. All India Radio, Audience Research Unit, Prasar Bharat,2002

Course Code	Title of the Course
30924	VIDEO PRODUCTION

OBJECTIVES OF THE PAPER

- To Understand the preproduction planning stage
- To acquire Knowledge in shooting
- To Understand the importance of post production stage
- To be Competent in technical areas.

Possible Outcomes of the course:

- The course will give a clear ideas about Knowledge in shooting
- The Study of Understand the importance of post production stage
- The course will make the learners knowing about Competent in technical areas.

BLOCK I: Video Production and Camera Equipments

UNIT I

Preproduction Planning Stage - Concept –content – research-the basic script – the role of writer for television-budget – logistics- Crew – Location survey- Talents,

UNIT II

Roles of the production crew like the Producer, Production assistant, Cameraman, and the Studio crew both production and technical and other outdoor crew- who is who,

UNIT III

For studio and outdoor shows the set design backdrop and properties to be used, the role of the art director or the set designer. Props-Wardrobe-Makeup.

UNIT IV

Shooting Stage- Camera equipment and accessories – Shooting techniques – composition and framing types of shots- taking notes – writing the dope sheets- Shooting techniques used for News, Sports and business reporting,

BLOCK II: Programmes and its Various Types

UNIT V

Creative affairs programmes. Documentaries, features, Live-shows, event shows, Creative productions like serials, audio plays and outdoor serials, advertisement films, music videos, new formats etc.

UNIT VI

Technical inputs equipment required for various shows including lightning etc and Crew required for the various shows. Shooting techniques for the mega and the live shows and live News.

UNIT VII

Post Production Stage- Editing –linear-Nonlinear Equipment – preparation of edit-list, Use of the Dope sheet, editing schedule – Editing of the programme identify the editor, special effects, writing for the programme, recording the audio,

UNIT VIII

Use of Voice-over for the documentary- musical score recording and using the music lying of the tracks. Computer graphics (titling etc) – meet the deadlines.

BLOCK III: Professional Practice of Cameras

UNIT IX

Management
Professional practice
Management
Legal issues
Ethics

UNIT X

Technology -Technical areas- Equipment-Formats-Maintenance-Satellite TV- DTH- Outside Broadcast- Live links-Uplink, Downlink, Latest Technology-HDTV

UNIT XI

Single-camera shooting, Continuous single –camera shooting, Discontinuous single camera shooting, segmented shooting. Multi-camera treatment – Visual variety, Shot organisation, Subjective and objective approaches, Focusing audience attention, Creating tension, Pace, Timing and Visual clarity.

BLOCK IV: Different types of effect and Recording

UNIT XII

Visual effects-Mirror effects, Electronic effects, Chromo key techniques and Digital video effects. Timecode sync and color sync, remote controlling.

UNIT XIII

Studio Floor, Cameras on Pedestals, Microphones, Lighting rigs and the controlling Equipments, the role of Floor Manager, Production Control Room, Vision Control and Sound Control, Video Monitor, Vision Mixer, Audio Mixing console, Character Generator Digital Video Effects, VTR, and Talk Back.

UNIT XIV

Different video recording formats – Tapes: (VHS,Beta, Digi-Beta,HDV, DVCam, U-Matic) Tapeless: DVD, Optical and Blue ray Disks, Compact Flash Cards and Solid State cards, Hard-disk based recording etc.

REFERENCE BOOKS:

1. Gerald Millerson, Video Production hand Book, 3rd Edition, Focal Press, 2002.
2. Peter W.Rea& David K.Irving, Producing & Directing the Short Film and Video, 2nd Edition, Focal Press, 2001.
3. Deslyver& Graham Swainson, Basics of Video Production, 2nd Edition, Focal Press, 2001
4. Deslyver& Graham Swainson, Basics of Video Lighting, Focal Press, 2003.
5. Vasuki Belavadi, Video Production Second Edition, Published by Oxford university, 2017

**SECOND YEAR
THIRD SEMESTER**

Course Code	Title of the Course
30931	GRAPHIC COMMUNICATION

OBJECTIVES OF THE PAPER

- To Understand the concepts and significance of graphic communication
- To Understand the functions of a good design;
- To realize the opportunities and challenges of Graphic Communication.
- To Acquire Sound Knowledge in Publication design

Possible Outcomes of the course:

- The course will give a clear ideas about the concepts and significance of graphic communication
- The Study of the opportunities and challenges of Graphic Communication.
- The course will make the learners knowing about Acquire Sound Knowledge in Publication design

BLOCK I: Design and its Principles

UNIT I

Design – definition & fundamentals – purpose & functions of a good design – principles of design – design decisions – graphic communication –

UNIT II

definition, nature & scope, design process – layout stages & types – appropriate visual structure – shaping media architecture – modern design – opportunities and challenges.

UNIT III

Introduction
Basic components of design
visuals,
text,
graphics and
colour, typography

UNIT IV

Definition,
principles & significance,
visuals
categories, c
riteria for selection,
editing pictures,

BLOCK II: Photography and Components of Newspaper

UNIT V

Photography & designing
ethical issues

colour basics, color theories, colour psychology,
importance of colour in designing.

UNIT VI

Publication design
name plate,
master pages, templates, style sheets
dummying process role of computers in designing – quark xpress

UNIT VII

Architectural components of newspapers and magazines,
formats & page make – up,
front page, inside page,
editorial & opinion pages,

UNIT VIII

Life styles & feature pages,
food & fashion, entertainment,
business & classifieds, designing special & regular sections,
book design.

BLOCK III: Designing and Graphics

UNIT IX

Designing for public relations – newsletters.
Letterhead & logo design,
identify & collateral materials, product & packaging,

UNIT X

Hospitality materials & branding,
business correspondence material,
promotional material, advertising design, poster design.

UNIT XI

Graphics input - output devices:
Direct input devices - Cursor devices
Direct screen interaction - logical input.
Line drawing displays - raster scan displays.

BLOCK IV: Dimensions of Graphics

UNIT XII

Two dimensional graphics. Raster graphics - Scan conversion of polygons - region filling - algorithms. File formats – GIF, JPEG, TIFF, Graphics Animation Files, Postscript/Encapsulated Postscript files.

UNIT XIII

Curves and surfaces: Parametric representation of curves - parametric representation of surfaces - planes - curved surfaces - ruled surfaces.

UNIT XIV

Three dimensional graphics: 3D transformations - normal, oblique central projections
- 3D algorithms - hidden lines and hidden surfaces removal. Lighting, perception and depth of field.

REFERENCE BOOKS:

1. William Ryan, Thonsar Delma Learning, “Graphic Communication Today”, IV Edition, 2009.
2. Yolanda Zappaperra, Rotovision,2002 , “Editorial Design for Print & Electronic Media”
3. Chris Forst , II Edition, “Designing for Newspapers & Magazines”, Roulledge 2003
4. Traditional and Digital Techniques for Graphic Communication , Paul Lase, 2000
5. Notes on Graphic Design and Visual Communication, Gregg Berryman, Crisp Publication, 1990

Course Code	Title of the Course
30932	COMMUNICATION RESEARCH METHODS

OBJECTIVES OF THE PAPER

- To Understand the concept and significance of Research
- To acquire the knowledge about various Research Designs
- To explain the different methods of Communication Research
- To master the students in Research Report writing

Possible Outcomes of the course:

- The course will give a clear ideas about the concept and significance of Research
- The Study of the different methods of Communication Research
- The course will make the learners knowing about various Research Designs

BLOCK I: Research and its Various Types

UNIT I

Definition
elements of research
scientific approach
research and communication theories

UNIT II

Role and function
scope and importance of communication research
basic and applied research.

UNIT III

Research design components
experimental,
quasi-experimental, bench mark,
longitudinal studies – simulation
panel studies –co-relational designs.

UNIT IV

Methods of communication research
census method, survey method,
observation method – clinical studies
case studies – content analysis.

BLOCK II: Tools and Introduction of Statistical Technique

UNIT V

Tools of data collection: sources, media source books, questionnaire and schedules, people's meter, diary method, field studies, logistic groups, focus groups, telephone, surveys, and online polls.

UNIT VI

Random sampling methods and representativeness of the samples,
sampling errors
distributions in the findings.

UNIT VII

Report writing

data analysis techniques
coding and tabulation – non-statistical methods
descriptive – historical

UNIT VIII

Statistical analysis
parametric and non-parametric
uni - variate – bi-variate – multi-variate

BLOCK III: Test of Significance and Sampling

UNIT IX

Tests of significance
levels of measurement
central tendency – tests of reliability and validity
SPSS and other statistical packages.

UNIT X

Media research as a tool of reporting.
Readership and / audience surveys,
preparation of research reports / project reports / dissertations / theses.
Ethical perspectives of mass media research.

UNIT XI

Sampling in communications Research, Types, their applications and limitations.
Methods of data Collection: Interview, questionnaire, observation and case study applications
and limitations of different methods.

BLOCK IV: Use of Statistics and Preparation of Research Report

UNIT XII

Use of statistics in communication research, Basic statistical tools: measures of
central tendency (mean mode and median): measures of dispersion (standard deviation),
correlation and chi square.

UNIT XIII

Data processing, Analysis,
presentation and interpretation of data.
Use of graphics in data presentation.

UNIT XIV

Writing a research proposal
writing research report
Components and style.

REFERENCE BOOKS:

1. Arthur Asa Berger, “Media Research Techniques”, Sage Publications, New Delhi
2. Roger D.Wimmer, Mass Media Research
3. Wrench et al. Qualitative Research Methods for Communication, Oxford University Press.
4. Media and Communication Research methods, Arthur asa Bergur, San Feansisco State University , USA, 2016

Course Code	Title of the Course
30933	MEDIA LAWS AND ETHICS

OBJECTIVES OF THE PAPER

- To Understand the concept and significance of Media Laws in India
- To Acquire Sound Knowledge on Press Laws In India.
- To Understand the Architectural components of Civil And Criminal Laws:
- To attain the Knowledge about Role and responsibilities of professional bodies

Possible Outcomes of the course:

- The course will give a clear ideas about the concept and significance of Media Laws in India
- The Study of the Knowledge about Role and responsibilities of professional bodies
- The course will make the learners knowing about the Architectural components of Civil And Criminal Laws

BLOCK I: History of Media and Code of Ethics

UNIT I

History Perspective of the Media Laws in India- Constitution and Media: Fundamentals Rights, Freedom of Speech and Expression, Directive principles of state policy; Powers and Privileges of the Parliament / State legislative assemblies.

UNIT II

Press Laws in India
 Definition of contempt of court
 Intellectual property rights
 Trademark
 Patently and copy right

UNIT III

Parliamentary privileges- books and registration act- working journalist act- press council of India- press commissions of India- official secrets act.

UNIT IV

Press censorship, Right to information, Code of ethics for media professionals, the role of press council of India and other professional councils.

BLOCK II: Different Types of Media Laws

UNIT V

Civil And Criminal Laws: Civil and Criminal Law of Defamation; Relevant provisions of the Indian Penal Code with reference to sedition, obscenity, crime against women, children etc.,;

UNIT VI

Laws dealing with obscenity,
 Laws and constitutional provisions pertaining to Human Rights in India.

UNIT VII

Cinematograph Act, 1952; Prasar Bharathi Act; Committees on Broadcasting and Information Media; Broadcasting regulations – key issues; GATT and Intellectual property right legislations;

UNIT VIII

Cyber Laws in India: Need for cyber-laws, nature and scope of cyber laws, approaches to cyber laws, cyber – crimes, piracy, Convergence bill, Information Technology Legislation.

BLOCK III: Ethics and Case Studies

UNIT IX

Ethics,
Role and responsibilities of professional bodies;
Themes and issues in Media Ethics:
Principles and ethics of Journalistic conduct;

UNIT X

Comparison of ethical norms;
Codes for radio, television and advertising;
Case studies in media ethics and major ethical violations.

UNIT XI

Domestic violence act- tabloid and yellow journalism – violence and brutality – reporting during special sensitive situations- ethical construes in investigative journalism.

BLOCK IV: Copy Rights and Various Press Related Council

UNIT XII

Law of copyright,
major copyright issues/cases,
WIPO,
piracy of media products and the IT Act 2001.

UNIT XIII

The limits of the right to know – journalism ethics and patriotism- new roles of journalism and public opinion – journalist code of conduct – broadcast content complaints council.

UNIT XIV

Codes of ethics for media professionals, role of press council of India and other professional councils and case studies of major ethical violations by the Indian media.

REFERENCE BOOKS:

1. Basu, “Law of the Press in India”, Prentice Hall of India,2003
2. Basu, “Introduction to Indian Constitution”, Prentice Hall of India,2003
3. Hameling, Cess, “Ethics of Cyber-space”, Sage Publications,2001
4. Day, E Ethics in Media Communications: Cases and Controversies, Thomson Learning 2000
5. Leslie, “Mass Communication Ethics”, Thomson Learning, 2000.

Course Code	Title of the Course
30934	INTERNSHIP (ONE MONTH)

Students should go for an Internship for 4-5 weeks (one month), after the second semester before the end of third semester to any media organization with the dual approval of the University and submit the report with the work diary in the III semester

Scheme of Marks

Work Diary - 25 Marks

Report - 50 Marks

Viva Voce - 25 Marks

100 Marks

Viva Voce Examination will be conducted at the end of III Semester

FOURTH SEMESTER

Course Code	Title of the Course
30941	DEVELOPMENT COMMUNICATION

OBJECTIVES OF THE PAPER

- Understand the concepts and Communication – Definition, scope, forms and purpose; Types of Communication
- Knowledgeable in New communication technologies
- Thorough in Theories of Communication
- Competent in Media systems and theories,

Possible Outcomes of the course:

- The course will give a clear ideas about Knowledgeable in New communication technologies
- The Study of Theories of Communication
- The course will make the learners knowing about Competent in Media systems and theories

BLOCK I: Development and its Various Model

UNIT I

Development: Concept – Dynamics of development – Development issues – Development indicators – Dysfunctions of development – Communication perspective on development

UNIT II

Role of Communication in Development:
Development motivation,
Development participation
Approaches to Development Communication.

UNIT III

Dominant paradigm of Development:
Evolutionary model
Psychological variable model

UNIT IV

Cultural factors model
Economic growth model
Industrialization approach –
The critique of the above models.

BLOCK II: Communication Approaches and Development Support Communication

UNIT V

Introduction
Communication approaches of Dominant paradigm:
Powerful effects model of mass media

UNIT VI

Diffusion of Innovations
Mass media in modernization
The critique of above models.

UNIT VII

Alternative paradigms of Development and development communication:
Basic needs programme
Integrated Development
Intermediate technology

UNIT VIII

Self Development – Self reliance – Popular participation – New communication technologies – Traditional media use – Development support communication.

BLOCK III: Analysis of India's Development in Various Sectors

UNIT IX

Historical analysis of India's Development:
Gandhi Metha model,
Elawath experiment,
Nilokheri experiment

UNIT X

Five Year Plans, Models of Experimental Project: Rural Television – SITE, Kheda, Communications Project, Radio Rural Forum.

UNIT XI

Role of mass media organizations in Development Communication, Newspaper, Radio, TV, Traditional Media, PIB, DAVP, Song and Drama Division etc., Strategies of Development Communication, Role of NGOs in Development.

BLOCK IV: Development Support Communication and Case Studies

UNIT XII

Development support Communication in Agriculture, Health and Family Welfare, Education and Literacy, Environment, Women Empowerment, Poverty and Employment.

UNIT XIII

Case Studies On:

- a) Development Communication Experiences
- b) Role of NGOs in Development

UNIT XIV

Case Studies On:

- c) Application of Development support Communication in Agriculture / Health and Family Welfare / Literacy.

REFERENCE BOOKS:

1. Mozammel, Mazud. "Development Communication: Challenges in an Empowered Information Environment". Retrieved 28 August 2012.

2. Mefalopulos, Paolo (2008). Development Communication Sourcebook: Broadening the Boundaries of Communication. Washington ”.
3. McPhail, Thomas. (2009). Development communication: Reframing the role of the media. London, UK: Wiley-Blackwell
4. Flor, Alexander G. (1995). Development Communication Praxis. University of the Philippines Open University.
5. Flor, Alexander; Ongkiko, Ila Virginia (2006). Introduction to Development Communication.

Course Code	Title of the Course
30942	NEW MEDIA COMMUNICATION

OBJECTIVES OF THE PAPER

- To explain the meaning of New Media Communication
- To understand the various trends in New Media.
- To acquire the knowledge about Cyber Journalism.
- To realize the importance of Online Editing

Possible Outcomes of the course:

- The course will give a clear ideas about the knowledge about Cyber Journalism.
- The Study of the various trends in New Media.
- The course will make the learners knowing about the importance of Online Editing

BLOCK I: Communication Technology

UNIT I

Communication Technology (CT): concept and scope, CT and IT: similarities and differences – telephony – electronic digital exchange, C-Dot - Pagers, Cellular Telephone.

UNIT II

Internet: LAN, MAN, WAN, E-mail, Web, Ownership and administration of Internet, ISPs, WAP, types of Internet connections: Dial-up, ISDN, lease-line.

UNIT III

Optical fibre:
structure,
advantage and application;
protocols of Internet: SLIP, CSLIP, TCP/ IP, PPP

UNIT IV

WEB PAGE, Websites, Homepages.
Introduction to HTTP, HTML, ELP, DNS, JAVA;
browsing and browsers, bookmarks

BLOCK II: Searching Engine and Online Editing

UNIT V

Searching: through directory search engine, s
earch resources; video conferencing and telephony,
e-commerce: m-commerce, buying, selling, banking, and advertising on Internet.

UNIT VI

Web page development, inserting, linking; editing,
publishing, locating,
promoting and maintaining a website

UNIT VII

Cyber Journalism: On-line editions of newspapers
management and economics;
cyber newspapers-creation, feed, marketing, revenue and expenditure

UNIT VIII

Online editing,
e-publishing; security issues on Internet;
social, political, legal and ethical issues related IT and CT.

BLOCK III: Social Effect and Empowerment

UNIT IX

Social and Cultural effects of new Media:
Social Networking,
Information Overload,
Information Rich and Information Poor,

UNIT X

Knowledge Gap and Cultural Alienation New media impact on old media
ICTs for Development
Empowerment,
right to information

UNIT XI

Connotation, Denotation, Reading Comprehension - Reading between Lines -
Listening for cues - Arguing skills - Negotiating skills - Introducing a chief guest-
Introducing a Programme - Summarizing - Evaluative & Analytical Writing

BLOCK IV: English and its Importance in Media

UNIT XII

Foreign words in English - Tense forms - Participle, Perfect - Reading Reviews -
Listening to interpret & analyze - Presenting and marketing a product - Scene description -
Writing recommendations - Writing a news report - Group created written reports giving
instruction on various aspects of target vocabulary.

UNIT XIII

British/American English - Media related Vocabulary - Understanding Schedules -
Listening to interviews & Dialogues - Role plays in various authentic situations -
Conducting interviews - Organizing a programme - Job Application with CV (with Cover
letter)

UNIT XIV

Prepositional phrases - Active & Passive - Extensive Reading - Novels & Plays -
Listening for data collection - Evaluating problems and giving suggestions - Giving
Directions - Oral & Written - Creative Writing - Using online resources to extract authentic
materials on specific areas of interest.

REFERENCE BOOKS:

1. Global Communication in Transition: The end of diversity (1996), HamidMowlana, Sage Publication, Newbury Park.
2. Global information and World Communication (2nd edition) - (1997) Hamid Mowlana Sage Publications, New Delhi.
3. World Communication Report: The media and the challenge of the new technologies (1997) - Ed. Alaine Modouz, UNESCO Publishing.
4. New Media - Ronald Rice, (1984) Sage Publications
5. Public Communication Campaigns, Ronald E.Rice, Charles K.Atkin, Sage Publications,2012

Course Code	Title of the Course
30943	CORPORATE COMMUNICATION

OBJECTIVES OF THE PAPER

- To explore the scope and functions of Corporate Communication
- To understand the Crisis and Disaster Communication Management
- To acquire the Knowledge on Corporate Social Responsibility
- To understand the Importance of Organizational Communication, Business Communication

Possible Outcomes of the course:

- The course will give a clear ideas about scope and functions of Corporate Communication
- The Study of the Importance of Organizational Communication, Business Communication
- The course will make the learners knowing about the Crisis and Disaster Communication Management

BLOCK I: Corporate Communication and Conference Management

UNIT – I

Definition,
scope
functions of Corporate Communication

UNIT – II

Corporate Culture
Citizenship
Philanthropy
International Communication

UNIT – III

Corporate Identity Philosophy/Image Building – Event & Conference Organization & management

UNIT – IV

Introduction of Image,
Event
Conference Management

BLOCK II: Art of Persuasion and Communication Strategy

UNIT – V

Counselling,
Crisis and Disaster Communication Management
Functions

UNIT – VI

Art of persuasion,
feedback,

campaign planning and strategies

UNIT – VII

Advertising and the marketing communication environment,
customer care,
strategic planning and campaign management

UNIT – VIII

Communication Strategy – 4 P's

BLOCK III: Corporate Social Responsibility and Social Media

UNIT – IX

Corporate Social Responsibility

UNIT – X

Corporate Crisis and Conflict Situation

UNIT – XI

Social Media and Corporate Communication

BLOCK IV: Employee Communication and Case Study

UNIT – XII

Employee Communication & Media Relations,

UNIT – XIII

Organizational Communication, Business Communication

UNIT – XIV

Case study of Corporate Crisis Management

REFERENCE BOOKS:

1. Ananthakrishnan, M. (2011) Impact of Corporate Communication on Internal Public – A Case Study of Hindustan Aeronautics Ltd., Unpublished Ph.D., Thesis, University of Mysore, Karnataka, India.
2. Andrews, P. H. and Bird, J. E. (1989) Communication for Business and the Professions, Dubuque, Wim C. Brown Publishers, Iowa, U.S.A.
3. Banerjee, A. K. (2009) Art of Corporate Communication, Lotus Press.
4. Prakash, Jagadeesh (2007) Corporate Communication Practices in Public Sector: A Case Study of Karnataka Power Corporation Limited, Ph.D., Thesis, Bangalore University, Bangalore, Karnataka, India.
5. Cornelissen, J., Bekkum, T., Van, and Ruler, B., Van, (2006) Corporate Communication: A Practice-Based Theoretical Conceptualization, Corporate Reputation

Course Code	Title of the Course
30944	PROJECT WORK

Guidelines for Project work / Dissertation

- | | |
|---|------------|
| 1. Conceptualization of subject
And Research Problem | : 15 Marks |
| Review of Literature | : 10 Marks |
| 2. Presentation of Methodology | : 20 Marks |
| 3. Data Analysis & Dissertation | : 20 Marks |
| 4. Final Draft & Presentation | : 10 Marks |
| 5. Viva –voce | : 25 Marks |

Total	100 Marks
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Chapterisation

1. Introduction
2. Review & Related Literature
3. Research Methodology
4. Analysis and Interpretation
5. Discussion & Conclusion
6. Bibliography
7. Appendices

M.A (Education)

Sl. No.	Course Code	Title of the Course	CIA Max	ESE Max	TOT Max	C
FIRST YEAR						
I semester						
1	34811	Philosophical & Sociological Bases of Education	25	75	100	4
2	34812	Essentials of Educational Psychology	25	75	100	4
3	34813	Curriculum Design Process	25	75	100	4
4	34814	Innovation in Education	25	75	100	4
Total			100	300	400	16
II semester						
5	34821	Perspectives of Educational Technology	25	75	100	4
6	34822	Contemporary Issues in Education	25	75	100	4
7	34823	Educational Research Methodology and Statistics in Education	25	75	100	4
8	34824	Principles of Educational Management	25	75	100	4
Total			100	300	400	16
SECOND YEAR						
III semester						
9	34831	Guidance and Counselling	25	75	100	4
10	34832	Quality Issues in Education	25	75	100	4
11	34833	Value Education	25	75	100	4
12	34834	Comparative Education	25	75	100	4
Total			100	300	400	16
IV semester						
13	34841	Special Education	25	75	100	4
14	34842	Teacher Education	25	75	100	4
15	34843	ICT in Education	25	75	100	4
16	34844	Project Work / Dissertation	25	75	100	4
Total			100	300	400	16
Gran total			400	1200	1600	64

e. Syllabi:

FIRST SEMESTER

Course Code	Title of the Course
34811	PHILOSOPHICAL AND SOCIOLOGICAL BASES OF EDUCATION

OBJECTIVES OF THE PAPER

- To explain the individual and social needs for education.
- To discuss the etymological meaning of the “education”.
- To define the concepts of schooling, learning, training, teaching and instruction.
- To state and explain various concepts of education and
- To identify the aims of education in a democratic set-up.

Possible Outcomes of the course:

- The course will give a clear ideas about philosophical and sociological bases of education .
- The Study of philosophical and sociological bases of education gives various concepts of education.
- The course will make the learners knowing about socialization, Nationalintegration, values enshrined in our constitution

BLOCK I: EDUCATION AND EDUCATIONAL PHILOSOPY

UNIT I Philosophical Perspectives of Education

Education - Meaning, scope and objectives-philosophy-meaning and scope-philosophy of education-meaning and scope-relationship between education and philosophy - major systems of philosophy of education - idealism, naturalism, pragmatism, and democracy and their views on education.

UNIT II Education and Indian Philosophers

Major schools of Indian philosophy-Hinduism, Buddhism and Jainism-Educational doctrines of great thinkers of India-Swami Vivekananda, Rabindranath Tagore, Mahatma Gandhi and Sri Aurobindo-relevance of Indian Values to modern education and administration of education.

UNIT III Education and Western Philosophers

Great thinkers of the West-Plato, Rousseau, Frobel, Montessori, Macaulay’s Minutes, Bentinck’s Resolutions, Adim’s Report, John Dewey-Relevance of western values to modern education and administration of education

UNIT IV Education and Philosophy

Relationship between Education and Philosophy: Meaning of Philosophy, meaning of Education. -Different branches of philosophy viz. Metaphysics, Epistemology, Axiology. Radical Thoughts in education: De-schooling - Ivan Illich, Consciencetisation - Paulo Friere.

BLOCK II: PHILOSOPHY OF EDUCATION AND SOCIOLOGY PERSPECTIVES

UNIT V Education and Philosophical Schools

Marxism - Evaluations of the Traditional Marxist Perspective on Education- Existentialism

- development - an existential approach to education –Humanism – meaning- concept- and their impact on Education.

UNIT VI Vedic Education and Philosophy

Indian schools of Philosophy and their educational implications. -Vedant, Sankhya, Yog, Nayaya, Vaisheshik, Mimansa, -Buddhism, -Jainism.- The thematic contents of Upanishads and Bhagwat Gita and their educational implications.

UNIT VII Other Religious philosophy in Education

Philosophy of Islam and its educational implications.- Philosophy of Christianity and its educational implications.- National values enshrined in the India constitution and their educational implications.

UNIT VIII Sociological Perspectives of Education

Sociology of Education-meaning - scope-relationship between education and sociology- functions of education in society - assimilation and transmission of culture/traditions - activation of constructive and creative forces - need to study sociology of education -social institutions such as family, community, educational institution.

BLOCK III: SOCIALIZATION AND NATIONAL INTEGRATION

UNIT IX Socialization

State and property-education and culture-moral and religious education-socialization of the learner- meaning of socialization-learning social expectations and social manners-factors promoting socialization.

UNIT X Socialistic Pattern of Society

Development of new social patterns - Education for new social order and socialistic pattern of society-education as an instrument of social change-education as related to social equity and equality of educational opportunities.

UNIT XI Education and Nation Integration

Nationalism- Meaning of Nationalism- Demerits of Extreme form of Nationalism- Merits of genuine form of Nationalism- National Integration – Meaning of national Integration- problems of national integration, educational

measures to ensure national integration- national integration committee.

BLOCK IV: VALUES AND SOCIAL CHANGE

UNIT XII National values enshrined in our constitution

Fundamental rights-article 14 (Rights to equality in general)- Article 15(1) (Right to equality in Particular)- Article 15(3) (provision for women, SCs, STs, OBCs) – Article 19 (1) (Right to freedom)Article 21 (Right to life and personal liberty) – Article 45 of the Indian constitution and objectives of primary education.

UNIT XIII Social Change in India

Constraints on social change in India such as caste, class, language, religion and regionalism-education for downtrodden such as schedule caste, tribal and rural mass-education of women-problems and programmes promoting women's empowerment.

UNIT XIV Education and Social Mobility

Education and social mobility of the individual and the community-social stratification and mobility-reservation policies of the government to minimize social inequality – education for national integration and international understanding-education in tackling terrorism and maintaining global peace.

REFERENCE

1. Sharma, D.L, *Education in the Emerging Indian Society*, Surjeet Publications, Delhi, 2004.
2. Dash B.N. *Teacher and Education in the Emerging Indian Society*, Neelkamal Publications, Hyderabad, 2000.
3. Lakshmi, S. *Challenges in Education*, Sterling Publishers Pvt. Ltd., New Delhi, 1990.
4. J.C.Aggarwal, *Basic Ideas in Education*, Shipra Publications, Delhi, 2005.

Course Code	Title of the Course
34812	ESSENTIALS OF EDUCATIONAL PSYCHOLOGY

OBJECTIVES OF THE PAPER

- To explain the meaning and scope of educational psychology.
- To understand the process of human development.
- To learn the need of motivation in educational psychology.
- To state and explain the various theories in educational psychology and
- To identify the meta-cognitive process.

Possible Outcomes of the course:

- The course will give a clear picture of Methods of educational psychology , growth and development.
- The course will train the students to promote the motivation, personality, intelligence, meta cognition.
- The course will make the learners skilled in assessment of personality and Creativity .

BLOCK I: INTRODUCTION, METHODS AND GROWTH & DEVELOPMENT OF EDUCATIONAL PSYCHOLOGY

UNIT I Introduction to Psychology

Meaning- Definitions -Branches of Psychology- Goals of Psychology – Basic Psychological Process – Fields of Psychology - Schools of Psychology - Structuralism, Psychoanalysis, Behaviourism and Humanism.

UNIT II Educational Psychology

Meaning - Nature - Aims - Scope - Relation between Psychology and Education- Latest trends in Educational Psychology- Educational Psychologists and their experiments.

UNIT III Methods of Educational Psychology

- a) Introspection method
- b) Observation method
- c) Clinical method
- d) Experimental method
- e) Case Study method

Principles –Procedure - Merits and Demerits of the Methods.

UNIT IV Growth and Development

Meaning - Factors Influencing Growth and Development – difference between growth and development - Stages of Development and its characteristics-Adolescence: Problems and solutions- Role of teachers, parents, and peer group in adolescence.

BLOCK II: DEVELOPMENTAL THEORIES, PERCEPTION AND CONCEPT OF

MOTIVATION

UNIT V Dimensions and Theories of Development

Physical, Social, Emotional and Mental-Theories of development - Piaget's Cognitive Development-Freud's Psycho-sexual Development-Erikson's Psycho-Social Development

UNIT VI Perception

Sensation and Perception - Law of Perception: errors in perception (Illusion and Hallucination) -Attention- Information Processing-Formation of concepts- Piaget Theory- Remembering and forgetting-Memory-Strategies to enhance memory

UNIT VII Motivation

Definition - Functions of Motivation - Classification of Motives - Concept of Motivation - Maslow theory of need hierarchy - Characteristics - McClelland's Achievement Motivation -Strategy for enhancing achievement motivation.

BLOCK III: THEORIES OF INTELLIGENCES, PERSONALITY, META-COGNITION AND LEARNING

UNIT VIII Intelligence

Meaning, Definition and Types - Theories of Intelligence: Spearman's Two Factor, Thurston Group Factor, Thorndike Multifactor, Guilford Structure of Intellect, Intelligence Quotient-Nature and Types of Intelligence Test – Uses of Intelligence test.

UNIT IX Personality

Meaning-Determinants of Personality: Type theory - Trait theory and Development Theory –Integrated Personality-Assessment of Personality-Projective, Non-Projective Techniques and Dream analysis.

UNIT X Meta-cognition

Meaning - Determinants of meta-cognition – Meta-cognition in learning - The automation of cognitive and meta-cognitive processes - principles of meta-cognitive Instructions and Regulation – Meta-cognition and attention

UNIT XI Learning

Concept, Principles and factors affecting learning - Theories of Learning: Thorndikes Connectionism, Pavlov's Classical and Skinners Operant Conditioning –Learning by Insight Theory -Transfer of Learning.

BLOCK IV: CONCEPTS OF CREATIVITY, GIFTED, MENTALLY RETARDED CHILDREN AND INDIVIDUAL DIFFERENCESUNIT XII Creativity

- Concept of creativity
- Meaning of creative people
- Factors and process of creativity
- Strategies for fostering creativity
- Importance of creativity in education
- Measuring the creativity

UNIT XIII Gifted and Mentally Retarded Children

- Meaning and definitions
- Characteristics of gifted children
- Characteristics of Mentally retarded children
- Different types – identification
- Needs and their Problems.

UNIT XIV Individual Differences

Concept and areas, Determinants: Role of heredity and environment in developing individual differences, Implications of individual difference for organizing educational programmes.

REFERENCES

1. Agarwal, J.C. (2005). *Essentials of Educational Psychology*. Vikas Publishing House Pvt. Ltd., New Delhi.
2. Dandapani, S.(2005). *Advanced Educational Psychology*. Anmol publications Pvt., Ltd., New Delhi.
3. Kundu, CL and Tutoo, DN (1985). *Educational Psychology*, Discovery Publishers Pvt., Ltd., New Delhi.
4. Mohan (1993). *Educational Psychology*, wiley Eastern, New Delhi.
5. Mangal, S.K.(2004). *Advanced Educational Psychology*. Prentice Hall of India Pvt.
6. Nagarajan, K., Selvakumar, S.D., Devaraj and Srinivasan (2003). *Educational Psychology*, Ram Pablihers, Chennai.
7. Ponda, B.N. (2005). *Advanced Educational Psychology*. Discovery Publishing House, New Delhi.
8. Spirthall, C., Richard and Spirthall A. Norman (1990). *Educational Psychology, A Developmental Approach* Mc Grow Hill Publishing Company, New York.
9. Saravanakumar (2008). *Metacognitive perspectives* New Century Book. House Pvt., Ltd., Chennai.
10. Saravanakumar (2008). *Attention: An overview*, ArivuPathippagam, Chennai.

Course Code	Title of the Course
34813	CURRICULUM DESIGN PROCESS

OBJECTIVES OF THE PAPER

- To explain the meaning of curriculum.
- To understand the various aspects of education.
- To acquire the knowledge about curriculum construction.
- To realize the curriculum implementation and
- To identify the resources for curriculum transaction.

Possible Outcomes of the course:

- The course will give a clear picture of curriculum design, planning and implementation
- The course will train the students to curriculum transaction, issues and trends of curriculum implementation, steps and process of curriculum development.
- The course will make the learners skilled in to frame the educational curriculum

BLOCK I: CURRICULUM, PRINCIPLES, INFLUENCES, PLANNING AND IMPLEMENTATION OF CURRICULUM DEVELOPMENT

UNIT I Curriculum

Meaning - philosophical, sociological, and psychological bases of curriculum - principles of curriculum designing - curriculum as an instrument of national development

UNIT II Factors influencing curriculum construction

Factors influencing curriculum construction such as national political, economic, cultural, social and intellectual aspects – systems approach to curriculum construction – curriculum as an output in the system

UNIT III Curriculum planning

Development of programmes- curriculum planning framework – Structure for curriculum framing- Curriculum Implementation - syllabi and textbooks, characteristics of a good curriculum and a good textbook – overcoming present drawbacks in curriculum construction

UNIT IV Curriculum implementation

Curriculum as an input in the system – curriculum transaction strategies at higher education level – traditional and non-traditional strategies – group and individual methods of instruction – lecture, demonstrations, seminars, symposia, workshops, brainstorming, case analysis and team teaching – components effective curriculum transaction.

BLOCK II: RESOURCE AND ISSUES, CURRICULUM DEVELOPMENT AND DESIGN

UNIT V Resources for curriculum transaction

Instructional materials, library and electronic devices, audio-visual devices, the chalkboard, overhead projector, liquid crystal display projector, laboratory and field experience – using internet and computers for effective curriculum transaction.

UNIT VI Issue and trends of curriculum implementation

Effective Planning of Curriculum- Reflection of National and Universal Culture in the Curriculum- Empowerment and Continuous Professional Development of Teachers- Staff development of Curriculists - Effective Implementation of the Curriculum design- Monitoring and Evaluation of Curriculum Implementation.

UNIT VII Curriculum Development

Suggestions and Recommendations of curriculum Development
University Education Commission (1948),
Secondary Education Commission
(1952), Education Commission (1966)

UNIT VIII Curriculum Design

Curriculum Design & Development- Goals & Objectives- Outcomes & Competencies -
Curriculum Map or Matrix- Benchmarking- Concept and Criteria of Curriculum Development:
Scope, Sequence, Relevance etc.,

BLOCK III: TYPES, PROCESS AND CURRICULUM TRANSACTION

UNIT IX Components of Curriculum Design

Types of Curriculum Design –
Subject-Centred,
Activity-cum-Experience
Centered- merits and demerits.

UNIT X Steps and Process in Curriculum Development

Undifferentiated and
Differentiated Core Curriculum
Curriculum Development: Steps and Process

UNIT XI Curriculum Transaction

Instructional Materials and
Curriculum Transaction-
Text book and Allied Instructional Materials-
Preparation and Evaluation of Text Book

BLOCK IV: ANALYSIS, EVALUATION AND DIFFERENT ASPECTS OF CURRICULUM DESIGN

UNIT XII Analysis of Curricular Content

Designing units,
Suitable Presentation Modes
Teacher as Curriculum
Practitioner
Instructional Planning for Effective Teaching

UNIT XIII Curriculum Evaluation

Meaning of evaluation – objectives and methods of evaluation-measurement and

evaluation in education-formative and summative evaluation tools of evaluation such as achievement test.

UNIT XIV Different Aspects of Curriculum Design

Psychological scales such as attitude scales, interest inventories, personality test-curriculum revision-need and principles to be adopted – curriculum designing and redesigning as continuous process.

REFERENCES

1. Jenkins David and Shipman D. Martin, *Curriculum-Introduction*, Open Books Publication Ltd. 1976.
2. Joyce S. Choate, Lamoine J. Miller et al., *Assessing and Programming Basic Curriculum Skills*, Allyn and Bacon Inc. 1986.
3. Kaba, R.M. and Rishi Ram Singh, *Curriculum Construction and youth Development*, sterling publishers, New Delhi, 1987.
4. Mc Neil, J.D. *Curriculum: A comprehensive Evaluation*, Little Brown and Co. 1985.
5. NCTE, *National Curriculum for Primary and Secondary Education. A framework*, New Delhi, 1986.
6. Srivtsava, A.P. *Teaching and Learning in 21st century*, Indian Books Centre New Delhi, 1987.

Course Code	Title of the Course
34814	INNOVATION IN EDUCATION

OBJECTIVES OF THE PAPER

- To explain the meaning of innovation.
- To understand the various types of innovative setting.
- To acquire the knowledge about today trends.
- To realize the importance of educational technology and
- To spot the format of community improvement.

Possible Outcomes of the course:

- The course will give a detailed account on innovation in education.
- The course will trains the students innovation from educational experiments and educational technology.
- The course will give a scientific approach of research activities like distance education, language laboratory and social network.

BLOCK I: INNOVATION, CULTURE AND GROWTH, EDUCATIONAL EXPERIMENTS AND FACTORS

UNIT I Innovation

Meaning and principles Barriers to change Suggestions for the promotion of innovativeness in students Instructional media.

UNIT II Emergence of School

Culture setting Culture and the school Characteristics of culture Education and culture Social demand for education Leadership Role of the teacher

UNIT III Innovations from Educational Experiments

Educational experiments of Rabindranath Tagore- Froebel's kindergarten – Basic Education and Gandhiji – Bertrand Russell – Principles underlying self-learning devices – Child development theory.

UNIT IV Factors on Innovations

Growth of culture – growth of civilization – factors responsible for the resistance to the growth of culture – social effects of innovations – inventions – principle of equality – innovation and educational goals.

BLOCK II: NATIONAL TRENDS AND EDUCATIOANL TECHNOLOGY

UNIT V National Trends in Educational Innovations

Science education in developed and underdeveloped countries – role of science and culture in the future – role of education – need for improvement in science education – UNESCO – modification of educational systems.

UNIT VI Educational Technology

Meaning – media and learning – characteristics of teaching devices- basic principles – types of machines – teaching machines and teachers – courseware development – uses of CAI system.

UNIT VII Programmed Instruction

Meaning – principles – types – merits and demerits – preparing the learning materials for programmed instruction – role of computer in instruction – teaching machines.

UNIT VIII Modernization

Meaning – innovations and educational goals – education and modernization – concept of modernization – difference between modernization and modernity – technological change, industrialization and modernization – characters – role of education in modernization.

BLOCK III: FREEDOM, ALTERNATIVE SCHOOLS AND DISTANCE EDUCATION

UNIT IX Freedom for Innovation

Institutional Autonomy – needs – privileges – effects – advantages – disadvantages – individual autonomy- teacher's autonomy – autonomy for students – freedom in learning situations- autonomy in institutional structure

UNIT X Alternative Schools

Dalton plan – Winnetka plan – Howard plan – Platoon plan – educational alternatives in public schools- de-schooling society – concept of de-schooling – arguments advanced for de- schooling society – Ivan Illich – important ideas – learning resources – criticism – non classroom learning.

UNIT XI Distance Education

Introduction

Meaning and definition

Need of distance education

Different formats and innovative elements

Correspondence courses

Open University

BLOCK IV: SYSTEM APPROACH, LANGUAGE LABORATORY AND NETWORK

UNIT XII System Approach

Meaning – system and system approach – phases – application – developing instructional model – assessment phase – defining the problem of instruction – learning characteristics – assessing the situational variables – selection and designing – selection of instructional method – media and aids – advantages.

UNIT XIII Language Laboratory

Needs – equipments and set-ups in a language laboratory – method of providing training – laboratory operation procedure – special features – advantages – audio cards – limitations – CCTV – advantages – video cassette and compact disc – tele lecture – tele conferencing – types

UNIT XIV Network

Aims of forming networks – LAN and WAN – host and terminal – functioning of network uses of network – educational technology for exceptional children- cybernetics – classroom instruction and communication – instructional medium and instructional aid – types – methods.

REFERENCES

1. Venkataiah S, Education in Information Age, Daya, New Delhi, 2001.
2. Venkataiah S, Education via Internet, Daya, New Delhi, 2001.
3. Agarwal, Rashmi, Educational Technology and conceptual Understanding, Daya, New Delhi, 2000.
4. Mukhopadhyay, M (ed) (1990) : Educational Technology challenging issues, New Delhi, Sterling.
5. Monhanty, J (1984) Educational Broadcasting: Radio and T.V. in Education, Delhi, Sterling.

SECOND SEMESTER

Course Code	Title of the Course
34821	PERSPECTIVES OF EDUCATIONAL TECHNOLOGY

OBJECTIVES OF THE PAPER

- To explicate the meaning and scope of educational technology.
- To understand the various types of communication.
- To attain the knowledge about various media in educational technology.
- To realize the importance of distance education concept and
- To acquire the idea of information and communication technology in education.

Possible Outcomes of the course:

- The course will give a clear picture of perspectives of educational technology.
- The course will train the students to learn various types of media.
- The course will make the learners to develop the communication skills and classroom management.

BLOCK I: EDUCATIONAL TECHNOLOGY AND COMMUNICATION

UNIT I Educational Technology

Meaning and scope, Technology in Education – Technology in Education – Phases – Foundations of Educational Technology: Psychology, Sociology, Human Engineering, communications and management – system approach as applied to Educational Technology.

UNIT II Communication

Definition, meaning and components of communication –Types of Communication: Interpersonal, Intrapersonal, Small Group, Large Group and Mass Communication Barriers to Communication

UNIT III Overcoming Barriers

Methods and media of Communication
Principles of effective class room communication Verbal and Non-verbal communication.

UNIT IV Communication Process and instructional system

Concept of Communication Process
Classroom Communication: verbal and non-verbal communication Factors affecting classroom communication

BLOCK II: CLASS ROOM INTERACTION AND INNOVATION LEARNING OF DISTANCE EDUCATION

UNIT V Classroom Interaction

Observation Schedules of Classroom Interaction, Flanders's Interaction Analysis Categories System (FIACS), Equivalent Talk Categories (ETC), Reciprocal Category System (RCS) - Designing instructional strategies.

UNIT VI Hardware and Software

Hardware and Software in Educational Technology,
High and low technology – CCTV-video tape recorders-radio,
projectors Merits and demerits.

UNIT VII Innovation in learning

Motion pictures – films – T.V.
Micro computers – types, characteristics,
Advantages and disadvantages
E-learning – Internet web based learning.

UNIT VIII Distance Education

Concept – Objectives of Distance Education – strategies and counseling methods different
contemporary system viz correspondence open and distance education:

BLOCK III: STUDENTS SUPPORT SERVICE AND TEACHING MODELS

UNIT IX Student Support Services

Distance learning: Resources for Distance Learning: print, Self Instructional
Modules (SIM), Radio, Television Educational satellite SITE.

UNIT X Teaching

Difference between teaching and instruction - Teaching at different levels: memory,
understanding and reflective - Modification of teaching behavior: microteaching and simulation.

UNIT XI Models of Teaching

Concept of Models of Teaching- Essential elements of four families of teaching Models

BLOCK IV: INNOVATIVE MODELS AND INFORMATION COMMUNICATION TECHNOLOGY AND E-LEARNING

UNIT XII Innovative Models

The Social Interaction (Role Play), The Information-Processing model (Inquiry
training), The Personal Models (Non-directive teaching).

UNIT XIII Information and Communication Technology

Meaning – Definition – Stages of Development – ICT Paradigms and practices –
Utilization of Various E-Resources in Education

UNIT XIV E-Learning

E-content- E-Book-E Journal-Advantages and Limitations – Multimedia-
Applications of Multimedia-Interactive Multimedia –Advantages of learning through
Interactive Multimedia.

REFERENCES

1. Elecusing, K.H. (1975) : Towards a critical appraisal of Educational Technology: Theory
and practice, Strasbourg, steering group of Educational Technology.
2. Traavers, R.M. (1973) Educational Technology and related Research viewed as a
political foree, Chicago: Rand McNally.

3. Freed, P and Hency, E., (1984):” A hand book of Educational Technology” London Kogan page.
4. Encyclopaedia of Educational Technology.
5. Mukhopadhyay, Mm. (ed) (1988): Year Book of Educational Technology, New Delhi, Sterling.
6. Mukhopadhyay, M (ed) (1990): Educational Technology challenging issues, new Delhi, Sterling.
7. Abnove, R.F. (1976): Educational Television: A policy critique and guide for developing countries, New York, Praeger.
8. Academy for Educational Development (1971): Hand book of Educational Technology, Washington Dc.

Course Code	Title of the Course
34822	CONTEMPORARY ISSUES IN EDUCATION

OBJECTIVES OF THE PAPER

- To explain the perception of multiplicity of courses in education.
- To understand the growth dimensions.
- To acquire the knowledge about autonomy and accountability.
- To realize the importance of quality management and
- To recognize the difference between open and closed systems approach.

Possible Outcomes of the course:

- The course will give a clear picture on multiplicity of courses in education, growth and dimensions.
- The course will train the students to promote the quality, challenges and strategies in education.
- The course will make the learners skilled in various functioning bodies, and different level of education.

BLOCK I: SPECIALIZATION COURSES, GROWTH DIMENSIONS AND ITS RESOURCES

UNIT I Multiplicity of Courses

Tradition and off-shoot specialization courses – Distance and e-learning courses, full-time, part-time and own-time courses, Interdisciplinary, hybrid and interface courses: Issues and significance.

UNIT II Growth Dimensions

Growth in institutions at all levels – Growth in student strength – Heterogeneity of student population – Quantity vs Quality issues.

UNIT III Autonomy and Accountability

Issues relating to autonomy, accountability and accreditation of individual, departmental and institutional levels – Impact on stake-holders and the societal system – Autonomy as an instrument of transformational leadership – Leadership in education management - Change Management: Issues – Innovators – Adopters – Legends.

UNIT IV Resources and Facilities

Govt. Funding: Size, trend and need for higher support – Private capital in educational investment – Community resources: Financial, intellectual, infrastructural and motivational resources: Harnessing and commitment thereof.

BLOCK II: QUALITY MANAGEMENT, MASS-MEDIA AND CONTINUING EDUCATION

UNIT V Quality Management

Need for excellence in standard of education – Matching global standards: Challenges and strategies – Top-down and bottom-up approaches – SWOT analysis of every constituent – ISO standards.

UNIT VI Relations Management and Systems Orientation

Internal and external relations – Campus tranquility management – Stakeholders participation in management – Extracurricular activities for institution and social bonding extension services and outreach programmes for societal development initiatives. Education as an integral part of every individual, family and society – Concepts of management.

UNIT VII Mass-Media

Communication process, programming. - The programmes conducted by UGC - EDU SAT, internet and telematic. - Implications of information technology to the Educational System. - Advances in information and Telecommunication technologies.

UNIT VIII Continuing Education

Vocational Education, Open Learning System. - Education of the differently abled children. - Life long Education.

BLOCK III: COMMUNITY EDUCATION AND NATIONAL POLICIES

UNIT IX Education of Minority Community

Education of Minority Community with reference to their aims and objectives, method and problems - Educational finances for Quality improvements- MHRD, UGC, NIEPA, NAAC, NCTE, RCI, AICTE, and NCERT.

UNIT X Community Education

Population Education, Family of life and sex education. - Value oriented education, work experience & SUPW, Environmental education. - Education of Women.

UNIT XI National policies of Education

National policies of Education- Their implications - Higher education- General and Technical. Role of UGC, AIU, AICTE, ICSSR, CSIR, ICA. - Types of universities and equivalent Institutes of Higher learning.

BLOCK IV: VOCATIONAL EDUCATION, FUNCTIONS OF DIFFERENT BODIES AND LEVELS OF EDUCATION

UNIT XII General and Vocational Education

Aims and objectives of general and vocational education. Role of NCERT, SCERT, NIEPA, CBSE. - Co-education, Examination- Reforms- Inspection- Supervision.

UNIT XIII Functioning bodies

Functions of DIET, NCERT, SCERT, Operation Blackboard, District Primary Education Programme. - Programmes for dropouts - National policies of Education- Their implications.

UNIT XIV Different Levels of Education

Elementary Education- Preprimary, Primary level – Aims and objectives -Girls
Education- problems at various levels in schools.

REFERENCES

1. Hanna DE and Associates, *Higher Education in the era of Digital Competition – Choices and challenges*, Modison, WI, Atwood Publishing, 2000.
2. Catherine M and David M, *Educational Issues in the Learning Age*, London.
3. Ann FL and Associates, *Leading Academic Change: Essential Roles for Departmental Chairs*, San Fransisco, Jossey-Bass Publishers, 2000.

Course Code	Title of the Course
34823	EDUCATIONAL RESEARCH METHODOLOGY AND STATISTICS IN EDUCATION

BLOCK I: EDUCATIONAL RESEARCH, VARIABLES, HYPOTHESES AND SAMPLING TECHNIQUES

UNIT I Introduction to Educational Research

Areas of Educational Research - Problems related to Teaching and Learning Process, Research Problem: Selection of Problem, Defining the Problem, Statement of the Problem, Review of related literature: Purpose of the Review, Identification of the Related Literature- Organizing the Related Literature, Validity and Reliability and Norms.

UNIT II Variables

Meaning of Variables,

Types of Variables (Independent, Dependent, Extraneous, Intervening and Moderator)
Delineating and operationalizing variables

UNIT III Hypotheses

Concept of Hypothesis, Sources of Hypothesis, Types of Hypothesis (Research, Directional, Non-directional, Null, Statistical and Question-form) Formulating Hypothesis, Characteristics of a good hypothesis, Hypothesis Testing and Theory, Errors in Testing of Hypothesis

UNIT IV Sampling Techniques

Concepts of Universe and Sample, Need for Sampling, Characteristics of a good sample, Techniques of Sampling (Probability and Non-probability sampling techniques), Sampling errors and how to reduce them

BLOCK II: RESEARCH TOOLS AND DIFFERENT TYPES OF RESEARCH

UNIT V Research Tools

Tools and Techniques of Data Collection: Observation, Interview, Questionnaire, Schedules, Rating Scales, Attitude Scale, Writing of Research Proposal

UNIT VI Descriptive Research

Causal – Comparative, Correlation, Case Study, Ethnography, Document Analysis, Analytical Method

UNIT VII Historical Research

Meaning, Scope of historical research, Uses of history, Steps of doing historical research (Defining the research problem and types of historical inquiry, searching for historical sources, Summarizing and evaluating historical sources.) Types of historical sources, External and internal criticism of historical sources.

UNIT VIII Experimental Research

Pre-Experimental Design, Quasi – Experimental Design and True – Experimental

Designs, Factorial Design / Independent Groups and repeated measures. Nesting Design Single – subject Design Internal and External Experimental Validity Controlling extraneous and intervening variables.

BLOCK III: QUALITATIVE AND QUANTITATIVE DATA ANALYSIS

UNIT IX Data Analysis

Types of Measurement Scale, Quantitative Data Analysis, Parametric Techniques, Non- Parametric Techniques, Conditions to be satisfied for using parametric techniques, Descriptive data analysis, Inferential data analysis

UNIT X Qualitative Data Analysis

Data Reduction and
Classification Analytical
Induction

Constant Comparison B

UNIT XI Analysis and Interpretation of Data

Concept of Parameter and Statistics, Levels of Confidence, Degrees of freedom, Standard Error of Mean, one-tailed and two tailed tests, t-test (independent and correlated samples), ANOVA: Assumptions, Correlations.

BLOCK IV: STATISTICAL ANALYSIS, RESEARCH REPORT AND COMPUTER IN EDUCATIONAL RESEARCH

UNIT-XII Statistical Analysis

Parametric statistics

Non-parametric statistics,
Simple statistical
applications

UNIT XIII Research Reporting

Steps involved in writing a research report and characteristics of a good research report.

Formal, Style and Mechanics of Report Writing.

UNIT XIV Applications of Computer in Educational Research

Uses of computer in data analysis, Preparation of Tables. Application of MS-Office: Basics of MS-Word, MS-Excel and MS-PowerPoint; Application of these soft wares' for documentation and making reports, Use of SPSS and other statistical software.

REFERENCES

1. Best, J.W. & Kahn, J.V. *Research in Education*, (6th edition) New Delhi, Prentice Hall, 1989.
2. Buch, M. B. *A Survey of Research in Education*, Baroda, CASE, M.S. University, 1974.
3. Fox, D. J. *The Research Process in Education*, New York. Holt, Rhinehart and Winston,

Inc. 1969.

4. Garrett. H.E. *Statistics in Psychology and Education*, Bombay, Vikils, Feiffer & Semen's Ltd, 1988.
5. Good, Barr &Scates *Methodology of Educational Research*, New York, Appleton Crofts, 1962.
6. Guilford, J.P. &Fruchter, B. *Fundamental Statistics in Psychology & Education*, New York, McGraw Hill, 1974.
7. Kerlinger F.N. *Foundation of Behaviour Research*, Delhi, Surjeet Publications, 1978.
8. Koul, L. *Methodology of Educational Research*, New Delhi, Vikash Publications, 1998.

Course Code	Title of the Course
34824	PRINCIPLES OF EDUCATIONAL MANAGEMENT

OBJECTIVES OF THE PAPER

- To explicate the meaning and scope of educational management.
- To understand the education planning process.
- To attain the knowledge about education leadership quality.
- To realize the principles of effective communication and
- To acquire the idea of Total Quality Management.

Possible Outcomes of the course:

- The course will give a clear picture on availability and utilization of various kinds of resources in educational management.
- The course will train the students to promote leadership quality and techniques in management.
- The course will make the learners skilled in "POSDCORB"

BLOCK I: EDUCATIONAL PLANNING MANAGEMENT AND FUNCTION OF MANAGEMENT THEORIES

UNIT-I Education Management

Meaning – Need – Importance – Characteristics – Scope – Objectives – Art or Science or Profession – Functions – Management – Operative – Education administration Vs Education management – Theory of education management – Principles of education administration.

UNIT –II Education Planning

Meaning – Rationale – Types of education plans – Approaches to education planning – Education planning process – Steps in education planning process – MBO in education – Decision-making – Types – Process.

UNIT- III Organisation

Meaning – Structures – Organisation Chart – Organisation for education administration: Central and State Government bodies – Delegation Vs Decentralization – Organizational competence – Strategic alliances.

UNIT- IV Direction

Meaning and significance – Principles of effective direction – Supervision – Education Leadership – Meaning – Scope – Importance – Styles – Qualities of successful educational leader.

BLOCK II: MOTIVATIONAL THEORIES, EDUCATIONAL ORGANIZATIONS AND HUMAN RESOURCE MANAGEMENT

UNIT-V Motivation

Meaning – Types – Motivational theories – Their impact on educational management – Motivating the employees of educational institutions.

UNIT –VI Educational Organizations

Meaning- types and characteristics of Educational Organizations, Educational Management: - development of management thought - practice with special reference - contributions of Taylor and Fayol;- principles of management

UNIT VII Aspects of Educational Management

Planning, organizing, supervising and controlling - Leadership in Educational Organizations: - meaning and nature, - nature of Leadership - Styles of Leadership and development of Leadership

UNIT VIII Human Resource management

Meaning of Human Resource management in Educational Organizations - Dynamics of Human Behaviour: - interpersonal behaviour, - behavioural norms - code of ethics of teachers - Conflict management

BLOCK III: PROFESSIONAL GROWTH AND TECHNIQUES IN MANAGEMENT, CHANGES IN EDUCATION

UNIT IX Professional Growth of Educational Personnel

Concept of professional growth, - factors facilitating professional growth, - personnel services, - evaluation of professional growth - Financial Resources - Allocation and their efficient use-Budgeting - Concept, forms & process of budgeting.

UNIT X Techniques in Management

Programme Evaluation and Review Technique (PERT) - Planning Programming Budgeting System (PPBS) - Management by Objectives (MBO) - Total Quality Management (TQM)

UNIT XI Changes in Education

Need for change- Population growth, technological & scientific development, educational growth & diffusion of knowledge - Planning for change: concept and objectives of planned change process.

BLOCK IV: APPROACHES TO CHANGE, EDUCATIONAL COMMUNICATION AND TOTAL QUALITY MANAGEMENT

UNIT XII Approaches to change

Need oriented, people oriented, and task oriented- The stages of Change Process: awareness, interest, conviction, evaluation, trial, acceptance and adoption (Rogers, Ryan and Gross.)

UNIT XIII Education Communications

Types – Barriers – Methods to overcome barriers – Principles of effective communication – Coordination - Importance of coordination in education institutions – Techniques of coordination.

UNIT XIV Educational Management Control

Meaning – Need – Control process – Techniques – Evaluation – Quality assurance – Total Quality Management (TQM) – ISO Certification for education institutions – Academic audit.

REFERENCES

1. Koontz and O'Donnel, *Essentials of Management*
2. Griffin, *Management*
3. John I Nwankwo, *Educational Administration-Theory and Practice*
4. Ananda W.P. Gurung *General Principles of Management for Educational Planner and Administrators*, Paris, UNESCO, 1984.
5. Bhagia, H.M. et.al *Educational Administration in India and Other Developing Countries*, New Delhi, Commonwealth Publication, 1990.
6. Flippo, E.B. *Personnel Management*, New York, McGraw Hill, (7th edition), 1984.
7. Fred Luthens *Organisational Behaviour*, Tokyo, McGraw Hill, International Book Co., 1996.

THIRD SEMESTER

Course Code	Title of the Course
34831	GUIDANCE AND COUNSELLING

OBJECTIVES OF THE PAPER

- To explain the perception of guidance in education.
- To understand the purpose of counselling.
- To acquire the knowledge about foundations of guidance and counselling
- To realize the importance of counsellor and
- To recognize the Egan model of counseling.

Possible Outcomes of the course:

- The course will give a clear picture on foundations of guidance and counselling.
- The course will train the students to promote the types of guidance and counselling.
- The course will make the learners skilled in various techniques of counselling.

BLOCK I: INTRODUCTION TO GUIDENCE, CONCEPT AND SCOPE AND TYPES OF GUIDENCE AND COUNSELLING

UNIT I Introduction to Guidance

Concept – Scope – Importance – Principles of Guidance - Types – Fields: Education – Career – Vocational – Professional- Profile of a competent guide.

UNIT II Meaning of Guidance

Nature and Scope of Guidance, - Need of Guidance - Principles of Guidance - Nature, Needs, Scope of each of the following

UNIT III Types of Guidance

Educational
Guidance
Vocational
Guidance Social
Guidance Group
Guidance

UNIT IV Counselling

Definition – Purpose – Elements – Characteristics – Forms – Counselling as applied to education.

***BLOCK II: APPROACHES IN COUNSELLING, TYPES OF TEST USES
AND GUIDANCE SERVICES***

UNIT V Approaches in Counselling

Nature and Principles of Counselling – directive, non directive, eclectic, role and functions of Counsellor, - Professional Education of the Counsellor

UNIT VI Testing Techniques

Types of tests used in Guidance - Tests of Intelligence: Aptitude, Interest, Achievement and Personality

UNIT VII Uses and limitations

Uses and limitations of testing techniques in Guidance - Non-testing techniques: observation, questionnaire, rating scale, interview anecdotal cumulative record, case study

UNIT VIII Guidance Services

Meaning of Guidance Services, Principles of Organizing Guidance Services
- Individual Information service: types of data to be collected about the individual student, Sources of information

***BLOCK III: INFORMATION SERVICES, THEORIES OF COUNSELLING AND
FOUNDATION OF GUIDANCE***

UNIT IX Occupational Information Service

Types of information materials, sources, methods of classifying and disseminating occupational information- Placement Service: Educational Placement, Vocational Placement- Evaluation of Guidance Programme, Follow-up Service

UNIT X Theories of Counselling

i) Directive, ii) Non-directive, iii) Psycho-analytical and iv) Behavioural

UNIT XI Foundations of Guidance and Counselling

Philosophical: Dignity of the human being – Sociological: Influence of social system – Psychological: Concept of self directed behaviour – Learning principles.

***BLOCK IV: QUALITIES OF GOOD COUNSELLOR, APPROACHES TO COUNSELLING
AND MODEL OF COUNSELLING***

UNIT XII Counsellor

Personal growth and effectiveness – Concerns of self, attitude, values, beliefs, relationships, self-esteem and openness to other – Accepting personal responsibility – Realistic levels of aspiration – Self-actualization – Portrait of a helper and a trainee.

UNIT XIII Approaches to Counselling

Personal models of counselling for teaching - Types of counselling: Client centered – Behavioural – Cognitive – Solution oriented.

UNIT XIV Egan Model of Counselling

Stages: Problem exploration and clarification – Integrative understanding dynamic self understanding – Facilitating action, developing a new perspective.

REFERENCES

1. Dr. Paul Hauck, *Depression*.
2. Eugene Kennedy, *On Becoming A Counsellor*, 1977.
3. Eugene Kennedy, *Crisis Counselling*, 1981.
4. Gerard Egan, *The Skilled Helper*, 1982.
5. Stephen Murugatroyal, *Counselling and Helping*.

Course Code	Title of the Course
34832	QUALITY ISSUES IN EDUCATION

OBJECTIVES OF THE PAPER

- To expound the quality related terminologies.
- To understand the performance indicators and benchmarking in higher education.
- To attain the knowledge about quality assessment and accreditation.
- To realize the concept total quality management in education and
- To acquire the idea of new quality perspectives in higher education.

Possible Outcomes of the course:

- The course will give a clear picture on performance indicators and benchmarking in higher education.
- The course will train the students to promote quality assessment and accreditation.
- The course will make the learners skilled in cultivation of students and total quality in management.

BLOCK I: QUALITY IN HIGHER EDUCATION, PERFORMANCE INDICATORS AND BENCHMARKING IN HIGHER EDUCATION

UNIT I Introduction to Quality Education

Quality in Higher Education: Quality related terminologies: Quality – Quality control – Quality assessment – Quality assurance

UNIT II Needs of Quality Education

Need for quality in higher education – Factors influencing quality – Accountability: Impact of accountability and accreditation on stake-holders and society.

UNIT III Performance Indicators

Performance Indicators in Higher Education: Concept – Types – Uses – Performance Indicators of NAAC

UNIT IV Benchmarking in Higher Education

Meaning
Types
Benefits
Methodologies and procedures.

BLOCK II: ASSESSMENT AND ACCREDITATION BY NAAC AND TOTAL QUALITY MANAGEMENT IN EDUCATION

UNIT V Quality Assessment and Accreditation

Meaning

Types
Accreditation procedure

UNIT VI Accreditation by NAAC

Existing practices – New methodologies and initiatives of NAAC accreditation –
Re- accreditation process

UNIT VII National Board of Accreditation (NBA)

Preamble – Need – Advantages – Process of Accreditation – Criteria and weightings.

UNIT VIII Total Quality Management in Education

Definition – Elements – Management plans – Approaches to TQM – TQM Process

BLOCK III: ACADEMIC AUDIT GLOBAL STANDARDS AND CERTIFICATION FOR EDUCATIONAL INSTITUTIONS

UNIT IX Academic Audit

Objectives – Advantages – Limitations – Accreditation and Academic Audit.

UNIT X Quality in Global Perspective

Global standards – Strategies for matching global standards – International practices of accreditation

UNIT XI Certification for Educational Institutions

ISO 9000 Certification for Educational Institutions: Methodology for Implementation of ISO 9000 – Benefits – Limitations – Accreditation Vs ISO 9000 Certification.

BLOCK IV: QUALITY IN EDUCATION AND STATUTORY BODIES IN THE FIELD OF EDUCATION

UNIT XII New Quality Perspectives in Higher Education

Capacity Building Model – Modification of Accreditation System – Industry Academia Partnership for quality education and research.

UNIT XIII Statutory Bodies in the Field of Education

Important functions and contributions of the following: MHRD, UGC, NCERT, NCTE & NIEPA

UNIT XIV Quality in Education

Input –Process –Output Analysis – Concept of Total Quality Management (TQM) - Supervision and Inspection –functions – Accreditation and certification.

REFERENCES

1. Armond V. Feigerbaum, *Total Quality Control*, McGraw Hill.
2. Ron Collard, *Total Quality*, Jaico, Delhi.
3. John Bark, *Essence of TQM*, Prentice Hall, Delhi.
4. Willborn & Cheng, *Global Management of Quality Assurance Systems*, McGraw Hill.

Course Code	Title of the Course
34833	VALUE EDUCATION

OBJECTIVES OF THE PAPER

- To orient students about the concepts of Morals, Morality, Values and Value Education.
- To enable students to understand various types of values, the distinction between morals, morality and value judgment and their significance for education.
- To orient students to theories of value and moral development and methods of value inculcation.
- To enable students to organize activities and develop curriculum for developing values and morals.
- To enable students to analyze the issues related to ethics, morals and values.
- To enable students to understand the problems in evaluating attitudes, morals and values.

Possible Outcomes of the course:

- The course will give a clear concepts of Morals, Morality, Values and Value Education
- The course will train the students to promote various types of values, the distinction between morals, morality and value judgment and their significance for education.
- The course will make the learners skilled in ethics, morals and values.

BLOCK I: INTRODUCTION, IMPORTANCE, VARIOUS COMMISSION IN VALUATION AND THEORIES OF VALUES

UNIT I Introduction to Value Education

Definition, meaning, nature and scope of value. Value and value education, positive and normative dichotomy of values, intrinsic and extrinsic values, personal and social values, hierarchy of values.

UNIT II Importance of Value Education

Need and Importance of Value Education,
 Status of value education in the curriculum,
 Need for value education in 21st century

UNIT III Various Committees/Commissions in Value Education

Recommendations of various committees/commissions:

- a) Indian Education Commission (1964-66)
- b) NCF (2005)

UNIT IV Theories of Values and Moral Development

Social, Sanskars, Genetic, Cultural and conscience factors for moral development and value education.

BLOCK II: FOSTERING VALUES, MEASUREMENT AND APPROACHES OF MORAL DEVELOPMENT

UNIT V Fostering values

Role of parents, Teacher's society, Peer groups religion, Government, Mass media

UNIT VI Measurement of Values and Morals

Evaluation, Assessment, Measurement of Values and Morals – qualitative and quantitative approaches, value judgment, defining issue test.

UNIT VII Moral Development

Moral Development of a Child - Concept of Moral Education & Sources of Values

UNIT VIII Approaches in Moral Development

Moral developmental approach – Jean Piaget- Stages of moral development – Kohlberg

BLOCK III: METHODS AND MODEL OF MORAL EDUCATION

UNIT IX Models of Moral Education

Rationale Building Model, Value Classification Model- Social Action Model

UNIT X Methods

Methods and Strategies of Value and Moral Development, Conventional methods – ethos and sanskar,

UNIT XI Models

Role Model, Imitation, teaching, Sermonizing, Storytelling, Jatak Kathas, Pancha Tantra, Folk stories and Arts, sharing responsibility.

BLOCK IV: APPROACHES AND TYPES, CONCEPT OF MORAL EDUCATION IN VALUE EDUCATION

UNIT XII Approaches and Strategies of Value Education

Approaches and value inclusion, analysis and clarification, Strategies – direct curricula, indirect curricula and personal examples.

UNIT XIII Types of Values

Domains of Values – caring, judging and action. Man, Morals and Morality, Values and Morality, Morals and ethics. The relevance of Morals and values in Education.

UNIT XIV Concept of Moral Education in Value Education

Meaning and Concept of Moral Education and Value Education – Their philosophical, psychological and sociological bases. The aims of life, values, morals and education.

REFERENCES

1. Allport, G. W. Vernon, P. E., & Lindzey G. (1960) Manual of Study of Values Boston: Houghton Mifflin.
2. Chitkara, M. G. (2003), Education and Human Values, APH Publishing Corporation, New Delhi – 110002.
1. Gawadne, E. N. (2002) Value Oriented Education Vision for Better Living: Sarup & Sons, New Delhi – 110002.
4. Mujeeb, M. (1971) Education and Traditional Values Delhi, (Meenakshi Prakashan).
5. Mukerjee, R. K. (1964) The dimensions of Values: Allen and Unwin.
6. Pepper, S. C. (1970) The sources of values: London; University of California Press.

Course Code	Title of the Course
34834	COMPARATIVE EDUCATION

OBJECTIVES OF THE PAPER

- To help the students to understand comparative education as an emerging multi education as discipline (with its scope and major concepts) of education.
- To acquaint the students with educational systems in terms of factors and approaches of comparative education.
- To orient the students with skills to assess the efficacy of educational systems of various countries in terms of the prevailing trends in those countries.

Possible Outcomes of the course:

- The course will give a clear picture on distribution, availability and utilization of various kinds of approaches of comparative education.
- The course will train the students to promote comparative education as an emerging multi education as discipline (with its scope and major concepts) of education
- The course will make the learners skilled to assess the efficacy of educational systems of various countries in terms of the prevailing trends in those countries.

BLOCK I: COMPARATIVE, SCOPE, STRUCTURE OF EDUCATION SYSTEM AND GLOBALIZATION

UNIT I Comparative Education

Meaning and scope of Comparative Education- Importance of the study of Educational Systems in a comparative perspective - Education for Economic Development

UNIT II Scope of Comparative Education

Meaning in terms of looking at it as a new discipline. - Scope and major concepts of comparative education. -Methods - Democracy and Nationalism - Area Study

UNIT III Structure of the System

Structure and distinctive features of the Systems of Education of Education in the following Countries: (a) U.K.,(b) U. S .A.,(c) China, and (d) India

UNIT IV Globalization

Educational for Global consciousness and development,- Education for Environmental of Protection - Role of UN and SAARC - Education Programmes of UNESCO.

BLOCK II: EQUALIZATION OF EDUCATIONAL OPPORTUNITY, COMPARATIVE EDUCATION AND MODERN TRENDS IN WORLD EDUCATION

UNIT V Problems of Illiteracy

Poverty and population Explosion - Problems of Illiteracy - Equalization of Educational Opportunities

UNIT VI Educational Development

Education for Socio - Cultural Development - Factors determining the Educational Systems of a Country

UNIT VII Comparative Education

Factors and approaches geographical, economic, cultural, philosophical, sociological, linguistic, scientific, historical, ecological, structural. - Factors related to – Cross disciplinary approach used in comparative education.

UNIT VIII Modern Trends in World Education

National and Global - Role of UNO in improving educational opportunities among the member countries, -various official organs of the UNO and their educational activities.

BLOCK III: COMPARATIVE STUDY, HIGHER EDUCATION STATUS AND PROBLEMS OF EDUCATION

UNIT IX Comparative Study

A comparative study of the educational systems of countries with special reference to: Primary Education -USA, UK, Russia, India, Secondary Education - USA, UK, Russia, India.

UNIT X Higher Education Status

Comparative Study: Higher Education - USA, UK, Russia, India. Teacher Education - USA, UK, Russia, India.

UNIT XI Problems of Education

Problems prevailing in developing countries with special reference to India, their causes and solution through education, Poverty

BLOCK IV: PROBLEMS OF EDUCATION, PREVENTION AND EDUCATIONAL IMPROVEMENT

UNIT XII Reason for illiteracy

Problems of Education: Unemployment, Population explosion, Gender Sensitization, Political instability.

UNIT XIII Prevention

Prevalent problems in Developing countries and intervention of education – Issues and concerns. - Major problems and educational interventions with special reference to India. - Environmental Degradation and sustainable development. - Universalization of elementary education.

UNIT XIV Educational Improvement

Role of U.N.O. in improving educational opportunities among member countries. - Official organs of U.N.O. and their educational activities in India.

REFERENCES

1. Mishra, N *Poverty in South Asia*, Delhi, Authors Press Publishers, 2001.
2. Andreas, M.K. *Tradition and Change in Education: A Comparative Study*, London, Prentice Hall, Inc. 1965.
3. Bereday, G.Z.F. *Comparative Methods in Education*, New York, Oxford, 1967.
4. Cramer, J.F.& Browne, G.S. *Contemporary Education: A comprehensive study of National systems*, New York, Brace and World, Inc. 1965.
5. Devi, S. F. *Systems of Education*, New Delhi, Mittal Publication, 2002.
6. De Silva & Peirie *The University of Sri Lanka* Macmillan India Ltd, New Delhi, 2008.
7. Batten T.R. : Education and Country Development, Inst. of Rural Life, 1959.
8. Bantock, G.H. : Freedom and authority Fabru, 1952
9. Bertand Russel : Education and the social order London, George Allen and Unwin Ltd. 1947
10. Garitea Hayes : The Historical Evolution of Modern Nationalism New York, Mac. Millan 1948

FOURTH SEMESTER

Course Code	Title of the Course
34841	SPECIAL EDUCATION

OBJECTIVES OF THE PAPER

- Know and understand the concept and principles of special education and its scope in India.
- Understand the reasons for and suggestions of recent commissions of education about special education as important and essential for realizing the objective of Universalization of Education.
- Grasp the meanings, specific needs and characteristics, and modalities of identifying various types of special/exceptional learners.
- Know and understand the various educational intervention programmes and academic provisions for meeting the exceptional needs of special children separately as also in regular classrooms.

Possible Outcomes of the course:

- The course will give a clear picture on various kinds of disabilities and its types.
- The course will train the students to promote the importance of special education and full fill the needs of special children in the inclusive class room.
- The course will make the learners skilled in handling the various kinds of assistive devices in the process of teaching learning.

BLOCK I: SPECIAL CHILDREN, SPECIAL EDUCATION AND EDUCATIONAL INTERVENTIONS

UNIT I Special Children

Nature, needs and types of special children (children with exceptional abilities – creative and gifted; with deficiency and handicaps – mentally retarded, sensory and physically disabled; with learning disability)

UNIT II Learning Disabled

Slow learners, under achievers, and other types of learning disabled; with social and emotional problems – truant, delinquents, drug addicts etc.). - Characteristics, problems and special educational needs of each type of special children.

UNIT III Special Education

Objectives, Principles and Scope of Special Education in India.
Problems and issues of Special Education in India.
Historical perspective of Special Education in India.

UNIT IV Educational Interventions

Meaning and type of Educational Interventions Educational programmes and their trends Concepts of mainstreaming Segregated,

Integrated to inclusive. Administration of special education.

BLOCK II: SPECIAL EDUCATION IN INDIA, WELFARE UNITS, REASONS FOR DISABILITY AND TEACHING AND LEARNING

UNIT V Special Education in India

Constitutional provisions for Special Education Government policies for Special Education Legislations for Special Education Recommendations of various committees and commissions NPE (1986) POA (1992)

UNIT VI Welfare Units

PWD (Person's with Disability) Act (1995). National Institutions of Special Education. Role of Rehabilitation Council of India.

UNIT VII Reasons for Disability

Visually impaired, low vision, hearing impaired, mentally retarded, orthopedically impaired, learning disabled children – Etiology and its characteristics with reference to the various disabilities and their prevention methods.

UNIT VIII Psychology of Teaching and Learning

Psychology of Teaching and Learning in relation to the disabled learner Curriculum for disabled learners Pedagogy for disabled learners Evaluation methods for disabled learners Placement for disabled learners

BLOCK III: SPECIAL CHILDREN WITH PHYSICAL, SOCIAL MULTIPLE DISABILITIES

UNIT IX Special children with Physical disabilities

Basis classification, characteristics and etiology of various types of disabilities and differences between them; Educational needs and problems of each type of disabilities. Physically disabled – visually handicapped Audio handicapped (speech and Hearing disabled) orthopedically handicapped

UNIT X Socially Deprive

Socially deprived meaning, types, Emotionally disturbed children: Meaning and Types Dyslexic Delicate Children Etiology

UNIT XI Multiple Disabilities (Associate disabilities)

Meaning of Multiple Disabilities Concept of Multiple Disabilities Types of Multiple Disabilities Causes of Multiple Disabilities Educational implications for Multiple Disabilities

BLOCK IV: SPECIAL CHILDREN WITH EXCEPTIONAL, GIFTED AND

PROBLEMATIC CHILDREN

UNIT XII Special children with Exceptional Abilities

Types – Gifted and Creative; Meaning, characteristics, problems and identification of each type. - Principles of creativity and its levels. - Measurement of creativity and fostering activities and programmes for creativity.

UNIT XIII Education of the Gifted and the Creative Children

Need and scope - Psychology of teaching and learning in respect to the gifted and the creative. -Curriculum, pedagogy, evaluation and placement in respect to the gifted and the creative.

UNIT XIV Problematic Children

Concept and meaning of Truants, - Delinquents, - drug addicts and other types of problem children, - their characteristics, - problems and etiology; - Preventive measures and educational programmes; - placement of delinquents, - drug addicts and other types.

REFERENCES

1. Burt, Cyril, (1950). *The Backward Child*, University of London Press
2. Charles, W. Telford and James, M. Saurey – (1772) *The exceptional Individual*, Prentice Hall, New Jersey.
3. De Haan, R. & Kauffman, J.M.(1978) *Exceptional Children- Introduction to special Education*, New Jersey, Prentice-Hall-Inc.
4. Wadia, A.R. (Ed.). *The Handicapped Child*. Tale Institute of Social Sciences. Bombay.
5. Kuppuswamy, B. (1976) *A text book of child Behaviour& Development*, New Delhi, Vikas publishing House.
6. Telford, C.W. &Sawrey, J.M. (1972). *The exceptional Individual*, New Jersey, Practice Hall Inc.
7. Robinson, H.B. & Robinson N.M. (1965). *The Mentally Retarded Child, A Psychological Approach*, New York, Mcgraw Hill, Co.

Course Code	Title of the Course
34842	TEACHER EDUCATION

OBJECTIVES OF THE PAPER

- The concepts of teaching competency, teacher competence, teaching skills, teacher performance and teacher effectiveness and distinctions between them.
- The essential competencies required in a teacher for effective transaction of the teaching – learning process and develop professional ethics.
- The trends and innovations in teacher education.
- The various teaching and training techniques and know about teaching models and the concepts and processes related to them.
- The trends and problems of researches in the area of teacher education and take inspiration to undertake researches in this area.

Possible Outcomes of the course:

- The course will give a clear picture on the importance of teacher education in the society.
- The course will train the students to promote for effective transaction of the teaching – learning process and develop professional ethics.
- The course will make the learners skilled in area of teacher education and take inspiration to undertake researches in this area.

BLOCK I: DEVELOPMENT OF TEACHER EDUCATION, CURRENT STATUS AND TECHNIQUES FOR HIGHER EDUCATION

UNIT I Teacher Education

Basic Concepts, aim, need for training, need for education of teacher and scope of Teacher Education, Teacher Education in a changing society: A brief industrial perspective of the teacher education in Indian context, basic features of teacher education in India.

UNIT II Development of Teacher Education

Development of teacher education in India from ancient period, medieval period, Buddhist period, Mogul period, British period to Post-Independence period. Needs of the learners, educational system and the teacher education Programme.

UNIT III Current Status of Teacher Education

The current Teacher Education system in India: analytical study and critical appraisal of the recommendations of various commissions and committees of the post independence era for teacher education.

UNIT IV Techniques for higher learning

Conference technique, seminar technique, symposium technique, workshop technique, Panel discussion technique, group discussion technique advantages and disadvantages of the techniques.

BLOCK II: STRUCTURE, NORMS, GUIDELINES AND AGENCIES OF TEACHER EDUCATION PROGRAMMES

UNIT V Structure of Teacher Education

Aims, objectives and Teacher Education curriculum at different levels of education viz. Pre-primary, Primary, Secondary and Higher level. Salient features – relevance flexibility integration and interdisciplinary.

UNIT VI Norms and Guidelines

Norms and guidelines for teacher education at different stages. - Appraisal of current curricula and reforms proposed by N.C.T.E. and N.C.E.R.T. for different levels. -Levels and types of teacher education courses.

UNIT VII Teacher Education Programmes

In-Service training programme, Pre-Service training programme, Distance Education programmes, orientation and Refresher courses, advantages their problems and limitations.

UNIT VIII Agencies of Teacher Education

Roles and scope of teacher education agencies. International level – U.N.E.S.C.O., National level - U.G.C., N.C.E.R.T., I.A.S.E., C.A.S.E, State level -- S.C.E.R.T., D.I.E.T.

BLOCK III: CURRENT PROBLEMS OF TEACHER EDUCATION TEACHING MODELS AND TEACHING PROFESSION

UNIT IX Current Problems in Teacher Education

Current problems of Teacher Education Institutions: Teacher Education and problems of practicing schools. - Community and other institutions - Preparation of teachers for special schools - Teacher's curricula and its implementation.

UNIT X Teaching and Teaching Models

Nature, definition, characteristic, fundamental elements of teaching , and principles of teaching. Model of Teaching – concept attainment model, inquiry model, social interaction model, Taba model, creative teaching model, information process model and instructive thinking models. **UNIT XI Teaching as a Profession**

Roles, responsibilities and accountability of teachers, Professional organization of teachers at various levels of education, Performance appraisal of teachers – issues and problems, Preparation of professional and personal teaching profession in future.

BLOCK IV: TRACHER EFFECTIVENESS, ORGANIZATIONAL BEHAVIOUR AND RECENT RESEARCH IN TEACHER EDUCATION

UNIT XII Teacher Effectiveness

Concept of teacher effectiveness, evaluation of teacher effectiveness, procedures for evaluation, tools for evaluating the teacher effectiveness and evaluation related problems in the context of each - Qualities of a good teacher – cognitive, affective and Psychomotor.

UNIT XIII Organizational behaviour

Introduction to organizational behavior Meaning and objectives of organizational behaviour, School as a social system Interpersonal interaction Communication in the organization

UNIT XIV Recent Research in the area of Teacher Education

Research in India, Research on teacher behaviour, Personal variables, Content variables, Strategies variable and situational variables.

REFERENCES

1. Anderson, L.W. (Ed.) - International Encyclopedia of Teaching and Teacher Education, Cambridge University Press.
2. Adams, M.P.-Basic Principles of student Teaching. Emas Publishing House, New Delhi.
3. Adoval, S.B.-Quality of Teachers, Amitabh Prakashan, Allahabad.
4. Biddle, B.J.-Encyclopedia of Teaching
5. Biddle B.J. and Ellene W.J. (Ed.) -Contemporary Research on Teacher Effectiveness, Holt, Rinehart & Wilson, NewYork.

Course Code	Title of the Course
34843	ICT IN EDUCATION

COURSES OBJECTIVES

- To understand the basic concepts of computer in ICT.
- To understand the components & types of Educational Technology.
- To comprehend the concept, principles, phases, levels & models of Teaching.
- To appreciate the multimedia approach in ICT.
- To realize the applications of modern technologies in Education.
- To understand the education applications of networking and internet tools like Search Engines, Blogs, & Social Networks.

Possible Outcomes of the course:

- The course will give a clear picture on concept, principles, phases, levels & models of Teaching.
- The course will train the students to the education applications of networking and internet tools like Search Engines, Blogs, & Social Networks.
- The course will make the learners skilled in applications of modern technologies in Education.

BLOCK I: MORDEN, TRENDS, RESOURCE CENTERS, EDUCATIONAL COMMUNICATION TECHNOLOGY

UNIT I Modern Technologies in Education

Computer: Basic concept & types of computer; Components of computer, Operating System, Application of Computer in the field of Education & Evaluation. Computer Assisted Instruction. Concept and uses of M.S. word, M.S. excel and Power point.

UNIT II Trends in Educational Technology

Video Tape, Radio Vision,
Tele-Conferencing,
ETV, CCTV, INSAT, EDUSAT, etc.,

UNIT III Resource centers for Educational Technology

CIET UGC IGNOU NOS
State ET Cells etc.,

UNIT IV Information and Communication Technology

Meaning and Concept of ICT, Difference between ICT and ET
The Information Processing Cycle: Modes and Barriers
Effective Classroom Communication
Application of ICT in Classroom Instruction

***BLOCK II: ICT IN LEARNING PROCESS, PROGRAMMED INSTRUCTION
CONCEPT OF PEDAGOGY AND LEVELS OF TEACHING***

UNIT V ICT in Learning Process

Concept, Components and Steps Systems Approach to Instruction, Use of ICT in School Management. Rationale and Framework of ICT in Teacher Education: ICT Competencies in Teachers Instructional Design.

UNIT VI Programmed Instruction

Basic concepts of Programmed Instruction. Origin and types of programming. Linear programming Branching programming Development of the Programmed Instruction Material.

UNIT VII Teaching Technology

Concepts of Pedagogy and Andragogy Principles and Techniques of Andragogy Simulated Teaching Preparing the modules.

UNIT VIII Theories and Models of Teaching

Levels of Teaching: Memory, Understanding and Reflective Levels of Teaching. Models of Teaching: Advance Organizer and Jurisprudential Model. Presage, Process and Product. Use of Animation Films for the Development of Children's Imagination.

***BLOCK III: APPLICATION OF INFORMATION COMMUNICATION
TECHNOLOGY IN EDUCATION***

UNIT IX Information and Communication Technologies in Education

ICT in Education - Importance, Advantages and Limitations Information and Communication Technologies in Teaching- Learning: Teaching Learning Contexts and the Need for ICT Devices and their Applications. Use of Internet and WWW in Teaching and Learning. Application of Information and Communication Technologies in Classroom, School Management and for Professional Development of Teachers.

UNIT X ICT for teaching learning

Appreciate the potential of ICT in Education, specifically in teaching and learning. Releasing the importance of learner analysis and classroom analysis. Analyzing curriculum to identify areas for ICT infusion. Determining the ICT resources for teaching-learning.

UNIT XI Internet

Concept and types of network. Internet and internet tools. Introduction to Search Engines (Google, Yahoo, Bing, etc.) and Email. Blogging and its use in teaching.

BLOCK IV: SOCIAL NETWORKS, E-LEARNING AND DIGITAL STORY TELLING

UNIT XII Social Networks

Facebook Whatsapp Twitter, Skype, etc., Mobile learning. Their Educational Uses.

UNIT XIII E-Learning

Concept of e-learning, its trends, attributes and opportunities. Management and implementation of e-learning. E-Book and E-Magazine, Electronic Journals and E-Readers, E-Coaching, E-Tutorial and E-Moderation. The E-Journals in the field of Educational Technology Ethical Issues in Educational Technology.

UNIT XIV Digital storytelling

Combining text, graphic and audio visuals to create a communication. Developing a story and scripting by combining multiple digital media. Developing digital stories for communication in classrooms. Evaluating digital stories. Exploring possibilities for inclusive using digital story telling.

REFERENCE

1. Adam, D.M.(1985). Computers and Teacher Training; A Practical Guide. New York: The Haworth Press Inc.
2. Behera, S.C.(1991). Educational Television Programmes. New Delhi: Deep and Deep Publications.
3. Das, R.C.(1993)Educational Technology; A basic Text. New Delhi: Sterling Publishers Private Limited.
4. Kumar, N. & Chandiram, J.(1967). Educational Television in India. New Delhi: Arya Book Depot Patel, I.J. et al. Handbook of Programmed Learning, CASE Baroda.
5. Ray, P.K.S (2006). Technology of Instructional Design, Part I. Delhi: Dominant Publishers and Distributers.
6. Ray, P.K.S (2012). Technology of Instructional Design, Part II. Delhi: Dominant Publishers and Distributers.

Course Code	Title of the Course
34844	PROJECT WORK / DISSERTATION

PROJECT WORK

- After the Completion of First Year, students are eligible to commence the Project work under the supervision of the qualified guide. The Candidates are permitted to submit the Project work on completing 18 months of the course but not later than five years after the commence of the course
- The Guide / Supervisor of the Project work shall be an approved guide of Alagappa University, Karaikudi or a person with an M.Phil Degree working with three years teaching experience in any Government or Government Aided College of Education or Department of Education or DIET or a person working in Government or Government Aided College of Education or Department of Education or DIET with Ph.D. (Education) qualification.
- The students shall submit the consent letter from the guide in the prescribed format before the commencement of the project work.
- The Project Report shall not exceed 150 Pages and be not less than 50 Pages
- The Project Report should be certified by the Approved Guide with Self Declaration of the Candidate for assuring the Quality and Originality of the work.
- There is an internal Viva-Voce examination for the Project Report submitted.

➤ **The Split up of marks for the project will be :**

1. Innovativeness	-	25 Marks
2. Methodology and Analysis	-	25 Marks
3. Reporting and Presentation	-	25 Marks
4. Viva – Voce examination	-	25 Marks
TOTAL	-	100 Marks

M.Sc- (mathematics)

Sl. No.	Course Code	Title of the Course	CIA Max.	ESE Max.	TOT Max	C Max.
FIRST YEAR						
I Semester						
1.	31111	Algebra – I	25	75	100	4
2.	31112	Analysis – I	25	75	100	4
3.	31113	Ordinary Differential Equations	25	75	100	4
4.	31114	Topology – I	25	75	100	4
		Total	100	300	400	16
II Semester						
5.	31121	Algebra–II	25	75	100	4
6.	31122	Analysis–II	25	75	100	4
7.	31123	Topology – II	25	75	100	4
8.	31124	Partial Differential Equations	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III Semester						
9.	31131	Differential Geometry	25	75	100	4
10.	31132	Optimization Techniques	25	75	100	4
11.	31133	Analytic Number Theory	25	75	100	4
12.	31134	Stochastic Processes	25	75	100	4
		Total	100	300	400	16
IV Semester						
13.	31141	Graph Theory	25	75	100	4
14.	31142	Functional Analysis	25	75	100	4
15.	31143	Numerical Analysis	25	75	100	4
16.	31144	Probability And Statistics	25	75	100	4
		Total	100	300	400	16

Detailed Syllabi:

SEMESTER-I

Course Code	Title of the Course
31111	ALGEBRA– I

Course Objectives:

The objective of the course is to

- introduce and study the basic properties of groups, normal sub groups and quotient groups.
- derive the notion of homomorphism, automorphism on groups and permutation groups.
- introduce the above mentioned concepts in Sylow's Theorems, direct products and finite abelian groups.
- study the structure of rings, some special classes of rings, ideals and quotient rings.
- define Euclidean rings, polynomial rings, polynomial rings over commutative rings and study their important properties and theorems.

Course Description:

BLOCK I: GROUPS AND NORMAL SUB GROUPS

UNIT – I

Set Theory - Mappings - The Integers -problems

UNIT -II

Group Theory: Definition of a group – Some examples of Groups – Some preliminary Lemmas – Subgroups

UNIT -III

A counting principle – Normal subgroups and Quotient groups

UNIT -IV

Homomorphisms – Automorphisms - Cayley's Theorem - Permutation Groups

BLOCK II: SYLOW'S THEOREM AND RING THEORY

UNIT -V

Another counting Principle – Application – Related problems

UNIT -VI

Sylow's Theorem - Direct products - Problems

UNIT -VII

Finite Abelian Groups – Supplementary problems

UNIT -VIII

Ring Theory: Definition and examples of rings – Some special classes of Rings

BLOCK III: RING HOMOMORPHISM, IDEAS AND FIELDS

UNIT -IX

Ring Homomorphisms - Ideals and Quotient Rings - Problems

UNIT -X

More ideals and Quotient Rings – Related Problems

UNIT -XI

The field of quotients of an Integral Domain - Euclidean Rings – Related Problems

BLOCK IV: EUCLIDEAN RING AND POLYNOMIAL RINGS

UNIT -XII

A Particular Euclidean Ring - Polynomial Rings

UNIT -XIII

Polynomials over the Rational Field – Related Problems

UNIT -XIV

Polynomial Rings over Commutative Rings – Supplementary Problems

REFERENCES:

1. I.N.Herstein, Topics in Algebra (2nd Edition) Wiley Eastern Limited, New Delhi, 1975.
2. M.Artin, Algebra, Prentice Hall of India, 1991.
3. John B.Fraleigh, A First Course in Abstract Algebra, Addison Wesley, Mass, 1982.
4. D.S.Malik, J.N.Mordeson and M.K.Sen, Fundamentals of Abstract Algebra, McGraw Hill (International Edition), New York, 1997.

Learning Outcomes:

After the successful completion of this course, students will be able to:

- understand the concepts of groups, normal subgroups and quotient groups.
- explain the concepts of homomorphism, automorphism on groups and permutation groups.
- analyze basic concepts about rings, ideals and quotient rings.
- demonstrate the examples of Euclidean rings, polynomial rings, polynomial rings over Commutative rings.

Course Code	Title of the Course
31112	ANALYSIS – I

Course Objectives:

The objective of the course is to:

- prove various statements by induction and emphasize the proofs' development.
- define the limit of a function at a value, a limit of a sequence, and the Cauchy criterion.
- prove various theorems about limits of sequences and functions and emphasize the proofs' development.
- prove various theorems about the series and emphasize the proofs' development.
- prove various theorems about the derivatives of functions and emphasize the proofs' development

Course Description:

BLOCK I: COMPLEX NUMBER, COMPACT AND CONNECTED SETS

UNIT -I

The Real and Complex Number Systems: Introduction- Ordered Sets –Fields- The Real Fields

UNIT -II

The Extended Real Number System- Complex field- Euclidean spaces -Problems

UNIT- III

Basic Topology: Finite- Countable and Uncountable Sets- Metric Spaces

UNIT- IV

Compact sets – Perfect sets – Connected sets- Problems

BLOCK II: SEQUENCES, SERIES AND CONTINUITY OF FUNCTION

UNIT -V

Numerical sequences and series; Convergent sequences- Subsequences- Cauchy sequences- Upper and Lower limits

UNIT -VI

Special sequences- Series- Series of non-negative terms- The number e – The root and ratio tests.

UNIT -VII

Power series – Summation by parts- Absolute convergence – Addition and Multiplication of series – Rearrangements

UNIT -VIII

Continuity: Limits of Functions – Continuous Functions- Continuity and Compactness- Continuity and Connectedness

BLOCK III: BOLZANO-WEIERSTRASS AND CANTOR INTERSECTION THEOREM

UNIT -IX

Discontinuities – Monotonic Functions - Infinite Limits and Limits at Infinity

UNIT -X

Open balls- Closed balls in \mathbb{R}^n – Closed Sets and Adherent Points – The Bolzano-Weierstrass Theorem

UNIT -XI

The Cantor intersection theorem – The Heine - Borel covering theorem – Compactness in \mathbb{R}^n

BLOCK VI: DERIVATIVES AND PARTIAL DERIVATIVES

UNIT -XII

Derivatives – The Chain Rule- Functions with Nonzero Derivative- Zero Derivatives and Local Extrema- Rolle's theorem- The Mean-value Theorem for Derivatives

UNIT -XIII

The Mean-value Theorem for Derivatives - Intermediate value theorem for Derivatives- Taylor's Formula with Remainder

UNIT -XIV

Partial derivatives- Directional derivative- The Total derivative- The Inverse function theorem- The Implicit function theorem – Problems

REFERENCES:

1. Tom M Appostol, *Mathematical Analysis*, Second edition(1974)Addision Wesley.
2. Walter Rudin, *Principles of Mathematical Analysis*, III Edition, McGraw-Hill Book Company, 1976.
3. H.L.Royden, *Real Analysis*, Macmillan Publ.co., Inc. 4th edition, New York, 1993.
4. V.Ganapathy Iyer, *Mathematical Analysis*, Tata McGraw Hill, New Delhi, 1970.
5. Robert G.Bartle, Donald R.Sherbert, *Introduction to Real Analysis*, Third edition, (2000)John Wiley & Sons.

Learning Outcomes:

After the successful completion of this course, students will be able to:

- define and recognize the basic properties of the field of real numbers. Improve and outline the logical thinking.
- define and recognize the series of real numbers and convergence shown the ability of working independently and with groups.
- comprehend rigorous arguments developing the theory underpinning real analysis.
- demonstrate an understanding of limits and how they are used in sequences, series, differentiation and integration.

Course Code	Title of the Course
31113	ORDINARY DIFFERENTIAL EQUATIONS

Course Objectives:

The objective of the course is to:

- formulate ordinary differential equations (ODEs) and seek understanding of their solutions, either obtained exactly or approximately by analytic or numerical methods.
- understand the concept of a solution to an initial value problem, and the guarantee of its existence and uniqueness under specific conditions.
- recognize basic types of differential equations which are solvable, and will understand the features of linear equations in particular.
- use different approaches to investigate equations which are not easily solvable. In particular, the student will be familiar with phase plane analysis.

Course Description:

BLOCK I: LINEAR DIFFERENTIAL EQUATIONS WITH CONSTANT COEFFICIENTS AND INITIAL VALUE PROBLEMS

UNIT-I

Linear Equations with Constant Coefficients: Introduction - The Second Order Homogeneous Equation

UNIT -II

Initial Value Problems for Second Order Equations –Related Problems

UNIT- III

Linear Dependence and Independence - Problems

UNIT-IV

A formula for the Wronskian – Non-Homogenous Equation of Order Two related Problems

BLOCK II: HOMOGENEOUS AND NON HOMOGENEOUS EQUATIONS OF ORDER n

UNIT- V

Homogeneous equation of order n - initial value problems for n^{th} order equations – Equations with Real Constants

UNIT -VI

Non-Homogeneous Equations of order n – Related Problems

UNIT -VII

Linear Equations with variable Coefficients: Reduction of the order of a Homogeneous Equation – Non-homogeneous Equation

BLOCK III: LINEAR EQUATIONS WITH REGULAR SINGULAR POINTS

UNIT -VIII

Homogeneous Equations with Analytic Coefficients – Legendre Equation.

UNIT -IX

Linear Equations with Regular Singular Points – Euler Equations - Second order Equations with Regular Singular Points – An Example

UNIT -X

Second order Equations with Regular Singular Points – General Case – Exceptional Cases

UNIT-XI

Bessel Equation – Bessel Equation (continued) – Regular Points at Infinity.

BLOCK IV: EXACT EQUATIONS AND METHOD OF SUCCESSIVE APPROXIMATION

UNIT-XII

Existence and Uniqueness of Solutions to First order Equations : Equations with variables separated – Exact equations

UNIT -XIII

Method of successive approximations – Lipchitz condition – Convergence of the successive approximations.

UNIT -XIV

Nonlocal existence of solutions - Approximations to solutions and uniqueness of solutions- Existence and uniqueness of solutions to systems and n^{th} order equations - Existence and uniqueness of solutions to system.

REFERENCES:

1. Earl A.Coddington, An Introduction to Ordinary Differential Equations – Prentice Hall of India, 1987.
2. D.Somasundaram, Ordinary Differential Equations, Narosa Publishing House, Chennai, 2002.
3. M.D.Raisinghania, Advanced Differential Equations, S.Chand and Company Ltd, New Delhi, 2001.

Course Code	Title of the Course
31114	TOPOLOGY – I

Course Objectives:

The objectives of the course is to:

- explain how to distinguish spaces by means of simple topological invariants (compactness, connectedness and the fundamental group).
- explain how to construct spaces by gluing and to prove that in certain cases that the result is homeomorphic to a standard space.
- construct simple examples of spaces with given properties.
- Define Urysohn's lemma and Urysohn's metrization theorem and find the applications of them.

Course Description:

BLOCK I: FUNDAMENTALS, FINITE AND INFINITE SETS

UNIT-I

Set Theory and Logic : Fundamental Concepts- Functions- Relations - The Integers and the Real Numbers

UNIT-II

The Integers and the Real Numbers - Cartesian Products- Finite Sets - Countable and Uncountable sets

UNIT-III

Infinite sets and the Axiom of choice- ordered sets- The Maximum Principle

UNIT-IV

Topological Spaces – Basis of a topology – Problems

BLOCK II: TOPOLOGICAL SPACES

UNIT-V

The order topology – The product topology on $X \times Y$ - Problems

UNIT-VI

The subspace topology – Closed sets and limit points – Hausdorff spaces

UNIT-VII

Continuous Functions – Continuity of a Function- Homomorphisms

The product topology

UNIT-VIII

Constructing continuous Functions -The metric topology - The quotient topology.

BLOCK III: CONNECTED AND COMPACT SPACES

UNIT-IX

Connected spaces – Connected sets in the real line –component and path components

UNIT -X

Local connectedness - Compact spaces - Problems

UNIT -XI

Compact sets in the real line - Limit point compactness - Local Compactness

BLOCK IV: COUNTABILITY AXIOMS AND NORMAL SPACES

UNIT -XII

The Countability axioms - The separation axioms - Problems

UNIT -XIII

Normal spaces - The Urysohn's lemma

UNIT -XIV

The Uryshon's metrization theorem – Related Problems

REFERENCES:

1. James R.Munkres, Topology a first course, Prentice Hall of India Pvt. Ltd.,New Delhi (1987)
2. James Dugundji, Topology, Prentice Hall of India, New Delhi, 1975.
3. George F.Simmons, Introduction to Topology and Modern Analysis, McGraw Hill Book Co., 1963.

Learning Outcomes:

Upon successful completion of the course, students will be able to:

- define and illustrate the concept of topological spaces and continuous functions,
- prove a selection of theorems concerning topological spaces, continuous functions, product topologies, and quotient topologies.
- define and illustrate the concept of product topology
- define and illustrate the concepts of the separation axioms.
- define connectedness and compactness, and prove a selection of related theorems, and describe different examples distinguishing general, geometric, and algebraic topology.

SEMESTER-II

Course Code	Title of the Course
31121	ALGEBRA-II

Course objectives:

The main objective of the course is to:

- study the basic concepts of linear independence and bases, dual spaces and inner product spaces.
- determine roots of polynomials, extension fields and more about roots.
- introduce the concept of Galois Theory and derive the condition for the solvability by means of radicals.
- analyze the characteristic roots of linear transformation and study about Nilpotent transformations.
- define Hermitian, unitary and normal transformations.

Course Description:

BLOCK I: VECTOR SPACES AND FIELDS

UNIT-I

Vector Space: Elementary basic concepts -Problems

UNIT-II

Vector Space: Linear Independence and Bases

UNIT-III

Dual spaces – Inner product spaces – Problems

UNIT-IV

Field: Extension Fields - Roots of Polynomials – Related Problems

BLOCK II: GALOIS THEORY AND LINEAR TRANSFORMATIONS

UNIT-V

Construction with Straight edge and Compass - More about roots.

Unit-VI

The Elements of Galois theory – Related Problems

UNIT-VII

Linear Transformations: The Algebra of linear transformations - Problems

UNIT-VIII

Linear Transformations: Characteristic roots - Matrices –Problems

BLOCK III: CANONICAL FORMS AND DETERMINANTS

UNIT-IX

Linear Transformations: Canonical Forms - Triangular Form

UNIT-X

Linear Transformations: Canonical Forms - Rational Canonical Form

UNIT-XI

Trace and Transpose – Determinants

BLOCK IV: HERMITIAN AND NORMAL TRANSFORMATIONS AND FINITE FIELDS

UNIT-XII

Hermitian Transformations --Related Problems

UNIT-XIII

Unitary and Normal Transformations

UNIT-XIV

Finite Fields- Related Problems

REFERENCES:

1. I.N.Herstein, Topics in Algebra (2nd edition) John Wiley and Sons, New York.
2. P.B.Bhattacharya, S.K.Jain and S.R.Nagpaul, Basic Abstract Algebra (2nd edition) Cambridge University Press, 1997 (Indian Edition)
3. S.Lang, Algebra 3rd edition, Addison-Wesley, Mass, 1993.
4. N.Jacobson, Basic Algebra, Vol. I & II W.H.Freeman, also Published by Hindustan Publishing Company, New Delhi, 1980.

Learning Outcomes:

After successful completion of this course, students will be able to:

- analyze and demonstrate examples of linear independence and bases, dual Spaces and inner product spaces.
- assess properties implied by roots of polynomials and more about roots.
- classify and determine the trace and transpose of the matrices.
- define, illustrate and apply the concepts of unitary Hermitian and normal transformation.

Course Code	Title of the Course
31122	ANALYSIS-II

Course Objectives:

This course is aimed to provide

- an introduction to the theories for Riemann-Stieltjes Integral. It begins with the exploration of the Existence of the integral.
- the concepts of vector valued functions and Rectifiable curves are introduced.
- the notion of sequences and series is presented and to help the students to visualize the uniform convergence.
- understanding of the fundamental concepts of some special functions.
- the skill of Lebesgue measure to evaluate them via examples.

Course Description:

BLOCK I: RIEMANN-STIELTJES INTEGRAL AND SEQUENCES AND SERIES OF FUNCTIONS

UNIT-I

Riemann-Stieltjes Integral: Definition and Existence of the Integral

UNIT-II

Properties of the Integral- Integration and Differentiation - Problems

UNIT-III

Integration of vector-valued functions - Rectifiable curves.

UNIT-IV

Sequences and Series of functions: Discussion of main problem- Uniform convergence

BLOCK II: UNIFORM CONVERGENCE AND SOME SPECIAL FUNCTIONS

UNIT-V

Uniform convergence and Continuity- Uniform convergence and Integration - Uniform convergence and Differentiation

UNIT-VI

Equicontinuous families of functions - The Stone Weierstrass theorem.

UNIT-VII

Some special functions: Power series- the Exponential- Logarithmic and Trigonometric functions

UNIT-VIII

The Algebraic completeness of the Complex field – Fourier Series – The Gamma function.

BLOCK III: LEBESQUE MEASURE MEASURABLE AND NON MEASURABLE SETS

UNIT-IX

Lebesgue measure - Outer measure- Measurable sets and Lebesgue measure

UNIT-X

Measurable functions- Egoroff's theorem- Lusin's theorem

UNIT-XI

Non-measurable sets – Lebesgue measurable functions – Little wood's three principles.

BLOCK IV: LEBESQUE INTEGRAL AND CONVERGENCE THEOREMS ON MEASURABLE FUNCTION

UNIT-XII

Lebesgue Integral: Riemann integral – Lebesgue Integral of a bounded function over a set of finite measure

UNIT-XIII

Lebesgue Integral of nonnegative measurable function – General Lebesgue integral

UNIT-XIV

Convergence theorems on measurable functions.

REFERENCES:

1. Walter Rudin, Principles of Mathematics Analysis (3rd edition), McGraw Hill 1976.
2. H.L. Royden, Real Analysis (3rd edition) Macmillan Publishing Company, New York, 1988.
3. G.De Barra, Measure Theory and Integration, Wiley Eastern Ltd., New Delhi, 1987.
4. Malik S.C. and Savita Arora, Mathematical Analysis, Wiley Eastern Limited, New Delhi, 1991.
5. Robert G.Bartle, Donald R.Sherbert, Introduction to *Real Analysis*, Third edition, (2000)John Wiley & Sons.

Learning Outcomes:

Upon successful completion of this course, students will be able to:

- extend the concepts of Riemann integral
- differentiate and Integrate Complex functions.
- carry out Stone Weierstrass theorem.
- compute sequence and series of functions.
- apply techniques of measurable functions in various fields.

Course Code	Title of the Course
31123	TOPOLOGY – II

Course Objectives:

The objectives of the course is to:

- explain how to distinguish regular spaces by means of simple topological invariants.
- explain how to construct Smirnov Metrization Theorem, Nagata Smirnov Metrization Theorem and to prove that in certain cases.
- Explain the concepts of complete metric spaces and open topology with suitable examples.
- construct simple examples of Baire spaces with given properties

Course Description:

BLOCK I: TIETZE EXTENSION THEOREM AND COMPLETELY REGULAR SPACES

UNIT-I

The Tietze Extension Theorem - Applications

UNIT-II

The Tychonoff Theorem - Problems

UNIT-III

Completely Regular Spaces - The Stone-Cech Compactification

UNIT-IV

Metrization theorems and Paracompactness: Local Finiteness - The Nagata Smirnov Metrization Theorem (Sufficiency) – The Nagata Smirnov Theorem (necessity).

BLOCK II: COMPLETE AND COMPACT METRIC SPACES

UNIT- V

Paracompactness – The Smirnov Metrization Theorem - Problems

UNIT-VI

Complete Metric Spaces and Function Spaces: Complete metric spaces

UNIT-VII

A Space – Filling Curve - Compactness in Metric spaces

UNIT-VIII

Point wise and compact convergence – Related Problems

BLOCK III: COMPACT-OPEN TOPOLOGY AND BAIRE SPACES

UNIT-IX

The Compact – Open Topology – Related problems

UNIT-X

Ascoli's theorem – Related problems

UNIT-XI

Baire Spaces – Applications

BLOCK IV: NOWHERE DIFFERENTIABLE FUNCTIONS AND DIMENSION THEORY

UNIT-XII

Nowhere differentiable Functions – Theorems.

UNIT-XIII

Nowhere differentiable Functions - Related Problems

UNIT-XIV

Introduction to Dimension Theory

REFERENCES:

1. James R Munkres, Topology, A First Course, Prentice Hall of India, New Delhi (1984).
2. J.L.Kelley, General Topology, Van Nostrnad, Reinhold Co., New York.
3. K.D.Joshi, Introduction to General Topology, Wiley Eastern Ltd., 1983.

Learning Outcomes:

Upon successful completion of the course, students will be able to:

- define and illustrate the concept of Regular spaces and Baire spaces.
- prove a selection of theorems concerning Regular spaces and Baire spaces,
- define and illustrate the concept of open topology.
- define and illustrate the concepts of the Metric spaces and Function spaces.
- define compactness and nowhere differentiable, and prove a selection of related theorems, and describe different examples

Course Code	Title of the Course
31124	PARTIAL DIFFERENTIAL EQUATIONS

Course Objectives:

The objectives of this course is to:

- introduce the notion of partial differential equations.
- introduce students to how to solve linear partial differential with different methods.
- introduce some physical problems in Engineering and Biological models that results in partial differential equations.

Course Description:

BLOCK I: ODE IN MORE THAN TWO VARIABLES AND PAFFIAN DIFFERENTIAL EQUATION

UNIT-I

Ordinary differential equations in more than two variables : Surfaces and curves in three dimensions

UNIT-II

Simultaneous differential equations of the first order and the first degree in three variables

UNIT-III

Methods of solution of $dx/P=dy/Q=dz/R$ - Orthogonal trajectories of a system of curves on a surface

UNIT-IV

Pfaffian differential forms and equations – Solution of Pfaffian differential equations - The three variables.

BLOCK II: LINEAR AND NON LINEAR PDE

UNIT-V

Partial differential equations of the first order : Partial differential equations – origins of first order partial differential equations

UNIT-VI

Cauchy's problem for first order equations – Linear equations of the first order- Integral surfaces passing through a given curve

UNIT-VII

Surfaces orthogonal to a given system of surfaces - Nonlinear partial differential equations of the first order- Cauchy's method of characteristics.

UNIT-VIII

Compatible systems of first order equations – Charpits method - special types of first

order equations – solutions satisfying given conditions - Jacobi's method

BLOCK III: PDE WITH CONSTANT COEFFICIENTS AND INTEGRAL TRANSFORMS

UNIT-IX

Partial differential equations of the second order : Origin of second order equations

UNIT-X

Linear partial differential equations with constant coefficients. Equations with variable coefficients – separation of variables

UNIT-XI

Method of integral transforms (exercise problems are excluded)

BLOCK IV: LAPLACE, WAVE AND DIFFUSION EQUATIONS

UNIT-XII

Laplace's equation : Elementary solutions of Laplace's equation – boundary value problems

UNIT-XIII

The Wave equation – Elementary solutions of the one dimensional wave equation

UNIT-XIV

The Diffusion equation : Elementary solutions of the diffusion equation – separation of variables.

REFERENCES:

1. I.N.Sneddon, Elements of Partial Differential Equations, McGraw Hill Book Company, 1986.
2. M.D.Raisinghania, Advanced Differential Equations, S.Chand & Company Ltd., New Delhi, 2001.
3. K.Sankara Rao, Introduction to Partial Differential Equations, Second Edition, Prentice – Hall of India, New Delhi, 2006.
4. J.N.Sharma and K.Singh, Partial Differential Equations for Engineers and Scientists, Narosa Publishing House, Chennai, 2001.

SEMESTER-III

Course Code	Title of the Course
31131	DIFFERENTIAL GEOMETRY

Course Objectives:

The general objective of the course is to:

- introduce the concepts of a curve, arc-length, curvature, plane curves, space curves, Frenet –Serret equations.
- make the knowledge about surfaces, smooth surfaces, tangents, normals, quadratic surfaces.
- introduce the concepts of lengths of curves on surfaces, isometries of surfaces, conformal mappings of surfaces.
- understand the celebrated Gauss-Bonnet theorem, the second fundamental form, the curvature of curves on a surface, the normal and principal curvatures, geometric interpretation of principal curvatures.
- give awareness to learners about The Gaussian and mean curvatures, The surfaces of constant mean curvature, Gaussian curvature of compact surfaces.
- introduce the basic properties of Geodesics, Geodesic equations, Geodesics on surfaces of revolution.

Course Description:

BLOCK I: SPACE CURVES AND SURFACES

UNIT-I

Introductory remark about space curves – definitions – arc length – Tangent, Normal and binormal

UNIT-II

Curvature and Torsion of a curve given as the intersection of two surfaces.

UNIT-III

Contact between curve and surfaces – Tangent surface, Involutives and evolutes

UNIT-IV

Intrinsic equations – Fundamental Existence Theorem for space curves

BLOCK II: HELICES, HELICOIDS AND FAMILIES OF CURVES

UNIT-V

Helices-Types of helices-Problems.

UNIT-VI

Definition of a surface – curves on a surfaces – Surfaces of revolution

UNIT-VII

Helicoids – Metric – Direction coefficients

UNIT-VIII

Families of curves – Isometric Correspondence – Intrinsic properties.

BLOCK III: GEODESIC PARALLELS AND GEODESIC CURVATURES

UNIT-IX

Geodesics – Canonical Geodesic equations – Normal property of Geodesics–
Existence theorem.

UNIT-X

Geodesic Parallels – Problems in Geodesic parallels.

UNIT-XI

Geodesic Curvature – Gauss – Bonnet Theorem Gaussian curvature.

BLOCK IV: LINER OF CURVATURE AND DEVELOPABLES

UNIT-XII

The Second Fundamental form – Principal curvature–Lines of Curvature

UNIT-XIII

Developables - Developables associated with space curves.

UNIT-XIV

Developables associated with curves on surfaces.

REFERENCES:

1. T.G. Willmore – An Introduction to Differential Geometry, Oxford University press (1983).

Learning Outcomes:

At the end of the module, students should be able to:

- understand the curvature and torsion of a space curve, how to compute them, and how they suffice to determine the shape of the curve.
- understand the definition of a smooth surface, and the means by which many examples may be constructed.
- understand the various different types of curvature associated to a surface, and how to compute them.
- understand the first and second fundamental forms of a surface, how to compute them, and how they suffice to determine the local shape of the surface.
- understand about Gaussian curvature, geodesics and its applications, how to compute them
- appreciate the distinction between intrinsic and extrinsic aspects of surface geometry.

Course Code	Title of the Course
31132	OPTIMIZATION TECHNIQUES

Course Objectives:

The general objective of the course is to:

- introduce the fundamental concepts of optimization techniques.
- make the learners aware of the importance of optimizations in real scenarios.
- provide the concepts of various classical and modern methods of for constrained and unconstrained problems in both single and multivariable.

Course Description:

BLOCK I: NETWORK MODELS

UNIT-I

Network Models: Minimal spanning tree algorithm - Problems

UNIT-II

Shortest route algorithms -Problems

UNIT-III

Maximal flow Model-Problems

UNIT-IV

Critical path calculations - Tree and total floats – Problems

BLOCK II: ADVANED LINEAR PROGRAMMING AND GAME THEORY

UNIT-V

Advanced Linear Programming - Simplex method using the restricted basis –

UNIT-VI

Bounded variables Algorithm - Revised Simplex method.

UNIT-VII

Game Theory - Optimal solution of Two Person Zero Sum Games

UNIT-VIII

Solution of mixed strategy Games – Related problems.

BLOCK III: SOLUTION OF GAMES USING LPP AND OPTIMIZATION THEORY

UNIT-IX

Game theory Linear programming solution of games.

UNIT-X

Classical Optimization Theory -Jacobian Method -Problems

UNIT-XI

Lagrangian Method - The Newton Raphson –Problems

BLOCK IV: KKT METHODS, SEPARABLE AND QUADRATIC PROGRAMMING

UNIT-XII

Karush- Kuhn- Tucker conditions.-Problems

UNIT-XIII

Unconstrained algorithms - Non Linear Programming Algorithms.

UNIT-XIV

Separable programming – Quadratic Programming.

REFERENCES:

1. Operations Research, H.A. Taha, 8th edition, Prentice Hall, New Delhi, 2008.

Learning Outcomes:

Upon successful completion of this course, students will be able to:

- understand the theory of optimization methods and algorithms developed for solving various types of optimization problems and to formulate optimization problems.
- understand and apply the concept of optimality criteria for various types of optimization problems.
- solve various constrained and unconstrained problems in single variable as well as multivariable.
- apply the methods of optimization in real life situation.
- develop and promote research interest in applying optimization techniques in problems.

Course Code	Title of the Course
31133	ANALYTIC NUMBER THEORY

Course Objectives:

The main objective of the course is to:

- gain an understanding and appreciation of analytic number theory and some of its important applications.
- use the theory in specific examples.
- focus on the properties of prime numbers and to understand prime number theorem.
- understand the partitions of numbers and learn techniques to relate the subject with Combinatorics.

Course Description:

BLOCK I: FUNDAMENTAL, PRIME NUMBERS AND ARITHMETIC FUNCTIONS

UNIT-I

The Fundamental Theorem of Arithmetic: Introduction – Divisibility – Greatest common divisor

UNIT-II

Prime Numbers – The series of reciprocals of the primes - The Euclidean Algorithm – The greatest common divisors of more than two numbers.

UNIT-III

Arithmetical Functions and Dirichlet Multiplication: Introduction; The Mobius function $\mu(n)$ – The Euler Totient Function $\phi(n)$ - A relation connecting ϕ and μ - A Product formula for $\phi(n)$.

UNIT-IV

The Dirichlet product of arithmetical functions: Dirichlet inverses and the mobius inversion formula - The Mangoldt function $\Lambda(n)$

BLOCK II: MULTIPLICATIVE FUNCTIONS AND FORMAL POWER SERIES

UNIT-V

Multiplicative functions – Multiplicative functions and Dirichlet multiplication - The inverse of a Completely multiplicative function - Liouville's function $\lambda(n)$, The divisor functions $\sigma_\alpha(n)$

UNIT-VI

Generalized Convolutions – Formal Power Series

UNIT-VII

The Bell series of an arithmetical function - Bell series and Dirichlet Multiplication – Derivatives of arithmetical functions - The Selberg Identity.

UNIT-VIII

Averages of Arithmetical Functions: Introduction, The big oh notation. Asymptotic equality of functions

BLOCK III: DIRICHLET PRODUCT AND CONGRUENCES

UNIT-IX

Euler's summation formula - Some elementary asymptotic formulas – The average order of $d(n)$ – The average order of the divisor functions $\sigma_\alpha(n)$

UNIT-X

The average order of $\phi(n)$ - An application to the distribution of lattice points, visible from the origin - The average order $\mu(n)$ and of $\Lambda(n)$ - The partial sums of a Dirichlet product – Applications to $\mu(n)$ and $\Lambda(n)$ Another identity for the partial sums of a Dirichlet product.

UNIT-XI

Congruences: Definition and Basic properties of congruences - Residue classes and complete residue systems - Linear congruences – Reduced residue systems and the Euler – Fermat theorem

BLOCK IV: POLYNOMIAL CONGRUENCES AND QUADRATIC RESIDUES

UNIT-XII

Polynomial congruences modulo p Lagrange's theorem – Applications of Lagrange's theorem - Simultaneous linear congruences. The Chinese remainder theorem – Application of the Chinese remainder theorem

UNIT-XIII

Polynomial congruences with prime power moduli - The principle of cross classification - A decomposition property of reduced residue systems.

UNIT-XIV

Quadratic residues and the Quadratic Reciprocity Law: Lagrange's symbol and its properties– Evaluation of $(-1/p)$ and $(2/p)$ – Gauss's Lemma – The quadratic reciprocity law - Applications of the reciprocity law - The Jacobi symbol - Applications to Diophantine Equations.

REFERENCES:

1. Tom M. Apostol, Introduction to Analytic Number theory, Springer Verlag.
2. Niven and H.S.Zuckerman, An Introduction to the Theory of Numbers, 3rd Edition, Wiley Eastern Ltd., New Delhi, 1989.
3. D.M.Burton, Elementary Number Theory, Universal Book Stall, New Delhi, 2001.

Course Code	Title of the Course
31134	STOCHASTIC PROCESSES

Course Objectives:

The objective of this course is to:

- Provide the fundamentals and advanced concepts of probability theory and random process to support graduate coursework and research in electrical, electronic and computer engineering.
- The required mathematical foundations will be studied at a fairly rigorous level and the applications of the probability theory and random processes to engineering problems will be emphasized.

Course Description:

BLOCK I: MARKOV CHAINS AND MARKOV PROCESS

UNIT-I

Definition of Stochastic Processes – Markov chains: definition, order of a Markov chain – Higher transition probabilities.

UNIT-II

Classification of states and chains – denumerable number of states and reducible chains

UNIT-III

Markov process with discrete state space: Poisson process – and related distributions– properties of Poisson process, Generalizations of Poisson processes –

UNIT-IV

Birth and death processes – continuous time Markov chains.

BLOCK II: WEINER AND BRANCHING PROCESS

UNIT-V

Markov processes with continuous state space - Introduction, Brownian motion - Problems

UNIT-VI

Weiner process and differential equations for it, Kolmogorov equations – Problems

UNIT-VII

First passage time distribution for Wiener process – Ornstein – Uhlenbeck process.

UNIT-VIII

Branching processes : Introduction – properties of generating functions of Branching Process

BLOCK III: PROBABILITY OF EXTINCTION AND STOCHASTIC PROCESS IN M/M/1-MODEL

UNIT-IX

Probability of extinction – Distribution of the total number of progeny conditional limit laws due to Kolmogorov and due to Yaglom,

UNIT-X

The classical Galton and Watson process – Bellman-Harris's process

UNIT-XI

Stochastic processes in Queueing Systems -Concepts – Queueing model M/M/1 – transient behaviour of M/M/1 model

BLOCK IV: BIRTH AND DEATH PROCESS AND BULK SERVICE SYSTEM IN QUEUEING THEORY

UNIT-XII

Birth and death process in Queueing theory: M/M/1 model and related distributions – M/M/∞ - M/M/S/S – loss system – M/M/S/M.

UNIT-XIII

Non birth and death Queueing process -Bulk queues – $M^{(x)}$ / M/1 model-Problems

UNIT-XIV

Bulk service system- poisson queue with general bulk service rule – M/M(a,b)/1 model – M/M/M(K,K)/1 model – M/M(1,b)/1 – M/M(a,∞)/1 model.

REFERENCES:

1. J. Medhi – Stochastic Processes – New age international Private limited – Second edition – 1993.
2. Gregory F. Lawler – Introduction to Stochastic Process, Chapman and Hall / CRC

Learning Outcomes

After successful completion of this course, students will be able to

- possess the basic knowledge about stochastic processes in the time domain.
- acquire more detailed knowledge about Markov processes with a discrete state space, including Markov chains, Poisson processes & birth and death processes.
- know about queueing systems and Brownian motion, in addition to mastering the fundamental principles of simulation of stochastic processes and the construction of Markov chain Monte Carlo (MCMC) algorithms.
- formulate simple stochastic process models in the time domain and provide qualitative and quantitative analyses of such models.

SEMESTER-IV

Course Code	Title of the Course
31141	GRAPH THEORY

Course Objectives:

The objective of the course is to:

- introduce students with the fundamental concepts of graph theory, with a sense of some of its modern applications.
- use these methods in subsequent courses in the design and analysis of algorithms, computability theory, software engineering, and computer systems.
- cover a variety of different problems in Graph Theory.
- come across a number of theorems and proofs.
- prove theorems which will be stated formally using various techniques.
- learn various graphs algorithms which will also be taught along with its analysis.

Course Description:

UNIT-I

Graphs – Subgraphs – Graph Isomorphism – Incidence and adjacency matrices – Vertex degrees

UNIT-II

Graphs – Walk- path - cycle – Bipartite graphs

UNIT-III

Trees – Cut Edges and Bonds – Cut vertices- Cayley's formula

UNIT-IV

Connectivity – Blocks – Euler tours – Hamiltonian cycles -Closure of a graph – Chavatal theorem for Non-Hamiltonian simple graphs.

UNIT-V

Matchings- Matchings and coverings in a Bipartite Graphs-Perfect Matchings

UNIT-VI

Independent sets – Cliques – Ramsey's numbers

UNIT-VII

Edge colourings- Edge chromatic Number – Vizing's Theorem

UNIT-VIII

Vertex colouring – Brook’s theorem – Hajo’s conjecture – Chromatic polynomials.

UNIT-IX

Planar graphs – Plane and Planar graphs - Dual graphs – Euler’s formula

UNIT-X

Bridges – Kuratowski’s Theorem – The Time table Problem

UNIT-XI

The five colour theorem – Non-Hamiltonian planar graphs

UNIT-XII

Directed graphs – Directed Path – Directed Cycles

UNIT-XIII

Networks - Flows – Cuts - Problems

UNIT-XIV

Max-Flow Min-cut theorem and Applications

REFERENCES:

1. J.A.Bondy and U.S.R Murty, *Graph Theory with Applications* Macmillan, London.
2. A Text book of Graph Theory , Balakrishnan. R, Ranganathan .K, Second Edition, Springer.
3. Invitation to Graph Theory, S.Arumugam and S.Ramachandran, Scitech Publications India

Learning Outcomes:

Upon completion of the course, students should possess the following skills:

- understand the basic concepts of graphs, directed graphs, and weighted graphs and able to present a graph by matrices.
- understand the properties of trees and able to find a minimal spanning tree for a given weighted graph.
- understand Eulerian and Hamiltonian graphs.

Course Code	Title of the Course
31142	FUNCTIONAL ANALYSIS

Course Objectives

The objective of the course is to:

- the study of spaces of functions.
- introduce the students to the basic concepts and theorems

Course Description:

UNIT-I

Normed space - Banach space – Properties of Normed spaces

UNIT-I

Convex sets- Quotient spaces-Equivalent norms

UNIT-III

Finite dimensional normed spaces and subspaces- Compactness and finite dimension

UNIT-IV

Linear operators – Bounded linear operators

UNIT-V

Linear functional – Normed spaces of operators..

UNIT-VI

Continuous or bounded linear operators- Dual spaces

UNIT-VII

Inner product spaces-Definition and examples-Orthonormal sets and bases

UNIT-VIII

Annihilators-Projections

UNIT-IX

Hilbert space- Linear functionals on Hilbert spaces

UNIT-X

Reflexivity of Hilbert spaces

UNIT-XI

Riesz's theorem – Hilbert adjoint operator – Self-adjoint, unitary and normal operators.

UNIT-XII

Hahn – Banach theorem - Adjoint operator – Category theorem – Uniform boundedness theorem.

UNIT-XIII

Strong and weak convergence – Convergence of sequences of operators and functionals

UNIT-XIV

Open mapping theorem -Closed graph theorem

REFERENCES:

1. E. Kreyszig, *Introduction to Functional Analysis with Applications*, (John Wiley and Sons, 2006).
2. G. Bachman and L. Narici, *Functional Analysis*, (Academic Press, 1966)
3. F. Riesz and B. Sz. Nagay, *Functional Analysis*, (Dover Publications, Inc., 1965).

Learning Outcomes:

By the end of this course, students should be able to:

- describe the properties of normed linear spaces and construct examples of such spaces.
- extend basic notions from calculus to metric spaces and normed vector spaces.
- state and prove theorems about finite dimensionality in normed vector spaces.
- state and prove the Cauchy-Swartz inequality and apply it to the derivation of other inequalities.
- prove that a given space is a Hilbert spaces or a Banach Spaces.
- describe the dual of a normed linear space.

Course Code	Title of the Course
31143	NUMERICAL ANALYSIS

Course Objectives:

The general objective of the course is to:

- Derive appropriate numerical methods to solve algebraic and transcendental equations.
- develop appropriate numerical methods to approximate a function.
- develop appropriate numerical methods to solve a differential equation.
- derive appropriate numerical methods to evaluate a derivative at a value.
- derive appropriate numerical methods to solve a linear system of equations.
- perform an error analysis for various numerical methods.
- derive appropriate numerical methods to calculate a definite integral.
- code various numerical methods in a modern computer language.

Course Description:

UNIT-I

Transcendental and polynomial equations : Rate of convergence of iterative methods

UNIT-II

Methods for finding complex roots – Polynomial equations

UNIT-III

Birge – Vieta method, Bairstow's method, Graeffe's root squaring method.

UNIT-IV

System of Linear Algebraic equations and Eigen Value Problems : Error Analysis of direct and iteration methods

UNIT-V

Finding Eigen values and Eigen vectors – Jacobi and Power methods.

UNIT-VI

Interpolation and Approximation : Hermite Interpolations – Piecewise and Spline Interpolation - Bivariate Interpolation

UNIT-VII

Approximation – Least square approximation and best approximations.

UNIT-VIII

Differentiation and Integration : Numerical Differentiation – Optimum choice of Step – length – Extrapolation methods

UNIT-IX

Partial Differentiation – Methods based on undetermined coefficient – Gauss

methods.

UNIT-X

Ordinary differential equations : Local truncation error – Problems

UNIT-XI

Euler, Backward Euler, Midpoint, -Problems

UNIT-XII

Taylor's Method –Related Problems

UNIT-XIII

Second order Runge Kutta method - Stability analysis.

REFERENCES:

1. M.K.Jain, S.R.K.Iyengar and R.K.Jain, Numerical Methods for Scientific and Engineering Computation, III Edn. Wiley Eastern Ltd., 1993.
2. Kendall E.Atkinson, An Introduction to Numerical Analysis, II Edn., John Wiley & Sons, 1983.
3. M.K.Jain, Numerical Solution of Differential Equations, II Edn., New Age International Pvt Ltd., 1983.
4. Samuel, D. Conte, Carl. De Boor, Elementary Numerical Analysis, McGraw Hill International Edn., 1983.

Learning Outcomes:

The students will become proficient in:

- understanding the theoretical and practical aspects of the use of numerical methods.
- implementing numerical methods for a variety of multidisciplinary applications.
- establishing the limitations, advantages, and disadvantages of numerical methods.
- demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions.
- derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.

Course Code	Title of the Course
31144	PROBABILITY AND STATISTICS

Course Objectives

The objective of the course is to:

- study the key concepts of probability, including discrete and continuous random variables, probability distributions, conditioning, independence, expectations, and moments.
- apply the basic rules and theorems in probability including Bayes's theorem and the Central Limit Theorem (CLT).
- apply the concepts of interval estimation and confidence intervals.
- apply the concepts of hypothesis testing t and F distributions.

Course Description:

UNIT-I

Probability and Distribution: Introduction – Set theory – The probability set function – Conditional probability and independence

UNIT-II

Random variables of the discrete type – Random variables of the continuous type –

UNIT-III

Properties of the distribution function – expectation of random variable – some special expectations – Chebyshev's Inequality.

UNIT-IV

Multivariate Distributions: Distributions of two random variables – Conditional Distributions and Expectations

UNIT-V

The correlation coefficient – Independent random variables – extension to several Random variables.

UNIT-VI

Some special Distributions: The Binomial and Related Distributions – The Poisson Distribution

UNIT-VII

The Gamma and Chi-square Distributions – The Normal Distribution – The Bivariate Normal Distribution.

UNIT-VIII

Distributions of functions of Random variables: Sampling Theory – Transformations of variables of the discrete type

UNIT-IX

Transformations of variables of the continuous type – the Beta, t and F distributions – Extensions of the change – of – variable Technique

UNIT-X

Distributions of order statistics – The Moment generating – Function, Techniques

UNIT-XI

The distributions of X and ns^2/σ^2 – Expectations of functions of Random variables

UNIT-XII

Limiting Distributions: Convergence in distribution – convergence in probability

UNIT-XIII

Limiting Moment Generating Functions – The Central Limit Theorem

UNIT-XIV

Some theorems on Limiting Distributions.

REFERENCES:

1. Introduction to Mathematical Statistics, (Fifth edition) by Robert V.Hogg and AllenT. Craig Pearson Education Asia.
2. M.Fisz, Probability, Theory and Mathematical Statistics, John Wiley and Sons, New York. 1963.
3. V.K.Rohatgi, An Introduction to Probability Theory and Mathematical Statistics, Wiley Eastern Ltd., New Delhi, 1988 (3rd Print).

Learning Outcomes:

Students who successfully complete this course should be able to demonstrate understanding of:

- basic probability axioms, rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables.
- how to derive the probability density function of transformations of random variables and use these techniques to generate data from various distributions.
- how to calculate probabilities, and derive the marginal and conditional distributions of bivariate random variables.
- discrete time Markov chains and methods of finding the equilibrium probability distributions.

4.4: PROJECT WORK / DISSERTATION

PROJECT WORK

- After the Completion of First Year, students are eligible to commence the Project work under the supervision of the qualified guide. The Candidates are permitted to submit the Project work on completing 18 months of the course but not later than five years after the commencement of the course
- The Guide / Supervisor of the Project work shall be an approved guide of Alagappa University, Karaikudi or a person with an M.Phil Degree working with three years teaching experience in any Government or Government Aided College in Department of Mathematics with Ph.D. (Mathematics) qualification.
- The students shall submit the consent letter from the guide in the prescribed format before the commencement of the project work.
- The Project Report shall not exceed 150 Pages and be not less than 50 Pages
- The Project Report should be certified by the Approved Guide with Self Declaration of the Candidate for assuring the Quality and Originality of the work.
- There is an internal Viva-Voce examination for the Project Report submitted.

- **The Split up of marks for the project will be :**

1. Innovativeness	-	25 Marks
2. Methodology and Analysis	-	25 Marks
3. Reporting and Presentation	-	25 Marks
4. Viva – Voce examination	-	25 Marks
TOTAL	:	100 Marks

Appendix II

(Model for wrapper and inside title page of Synopsis / thesis of the M.Sc work)

Title of the Thesis

THESIS SUBMITTED TO ALAGAPPA UNIVERSITY IN PARTIAL
FULFILMENT FOR THE AWARD OF THE DEGREE OF
MASTER OF
SCIENCE IN
MATHEMATICS

By

(Name of the candidate)

(Register Number of the Candidate: _____) Under the supervision of

(Name of the Research Supervisor)



**DIRECTORATE OF DISTANCE EDUCATION ALAGAPPA
UNIVERSITY**

**[Accredited with A+ Grade by NAAC (CGPA: 3.64) in
the Third Cycle] KARAIKUDI – 630 003**

INDIA

Month and Year

*[Note: The items in Italics as such are not to be scripted, but only the
appropriate details pertaining to them need to be in
the space provided]*

Detailed Syllabi

SEMESTER I

Course Code	Title of the Course
11	DESIGN AND ANALYSIS OF ALGORITHMS

Course Outcome:

- Able to understand the various algorithmic problem solving methods.

Unit No. Contents

BLOCK 1: INTRODUCTION

- 1 Introduction:** notion of algorithm, fundamentals of algorithmic problem solving, important problem types, fundamentals of analysis of algorithm efficiency
- 2 Asymptotic notations:** Big-oh notation, omega notation, theta notation
- 3 Performance analysis:** space complexity, time complexity, pseudo code for algorithms

BLOCK 2 : MATHEMATICAL ANALYSIS OF NON RECURSIVE ALGORITHMS

- 4 Analysis of Recursive algorithms:** algorithms for computing Fibonacci numbers
sequential sort
- 6 Closet-pair and convex-hull problems:** Divide and conquer, merge sort, quick sort, Binary search, Strassens matrix multiplication

BLOCK 3 : DYNAMIC PROGRAMMING AND SEARCH BINARY TREES

- 7 General method:** computing a Binomial coefficient, warshalls and Floyds algorithms, optimal search Binary trees, knapsack problems
- 8 Greedy Technique:** General method
- 9 Applications :** prims algorithm, kruskals algorithm, dijkstras algorithm

BLOCK 4 : SORTING AND OPTIMIZATION PROBLEM

- 10 Sort and Searching algorithms:** decrease and conquer, Insertion sort, Depth first search and Breadth first search, Topological sorting

11 **Generating combinatorial objects:** Transform and Conquer, presorting, Heap and Heap sort

12 **Optimization Problems:** Reductions, Reduction to Graph Problems

BLOCK 5 : BACKTRACKING AND GRAPH TRAVERSALS

13 General method: 8 queens problem, sum of subsets, Graph colouring, Hamiltonian cycle, Branch and Bound, assignment problem, knapsack problem, travelling salesman pobles

14 Graph traversals: connected components, spanning trees, NP hard and NP complete problems

M.Sc-(computer Science)

Courses of Study M.Sc Computer Science

S.No	Course code	Title of the Course	CIA Marks	ESE Marks	Total Marks	Credits
I Semester						
1	34111	Design and Analysis of Algorithms	25	75	100	4
2	34112	Applied Mathematics for Computer Science	25	75	100	4
3	34113	Advanced Java Programming	25	75	100	4
4	34114	Lab – Advanced Java Programming	25	75	100	4
		Total	100	300	400	16
II Semester						
1	34121	Computer System Architecture	25	75	100	4
2	34122	Distributed Operating System	25	75	100	4
3	34123	.Net Programming	25	75	100	4
4	34124	Lab – .Net Programming	25	75	100	4
		Total	100	300	400	16
III Semester						
1	34131	Cryptography and Network Security	25	75	100	4
2	34132	Cloud Computing	25	75	100	4
3	34133	Web Technology	25	75	100	4
4	34134	Lab – Web Technology	25	75	100	4
		Total	100	300	400	16
IV Semester						
1	34141	Data Mining and ware housing	25	75	100	4
2	34142	Mobile Application Development	25	75	100	4
3	34143	Artificial Intelligence and Expert Systems	25	75	100	4
4	34144	Project	25	75	100	4
		Total	100	300	400	16
		Grand Total	400	1200	1600	64

Detailed Syllabi

SEMESTER I

Course Code	Title of the Course
34111	DESIGN AND ANALYSIS OF ALGORITHMS

Course Outcome:

- Able to understand the various algorithmic problem solving methods.

Unit No.	Contents
BLOCK 1: INTRODUCTION	
1	Introduction: notion of algorithm, fundamentals of algorithmic problem solving, important problem types, fundamentals of analysis of algorithm efficiency
2	Asymptotic notations: Big-oh notation, omega notation, theta notation
3	Performance analysis: space complexity, time complexity, pseudo code for algorithms
BLOCK 2 : MATHEMATICAL ANALYSIS OF NON RECURSIVE ALGORITHMS	
4	Analysis of Recursive algorithms: algorithms for computing Fibonacci numbers
5	Empirical analysis of algorithms: Brute force, selection sort, Bubble sort, sequential sort
6	Closet-pair and convex-hull problems: Divide and conquer, merge sort, quick sort, Binary search, Strassens matrix multiplication
BLOCK 3 : DYNAMIC PROGRAMMING AND SEARCH BINARY TREES	
7	General method: computing a Binomial coefficient, warshalls and Floyds algorithms, optimal search Binary trees, knapsack problems
8	Greedy Technique: General method
9	Applications : prims algorithm, kruskals algorithm, dijkstras algorithm
BLOCK 4 : SORTING AND OPTIMIZATION PROBLEM	
10	Sort and Searching algorithms: decrease and conquer, Insertion sort, Depth first search and Breadth first search, Topological sorting
11	Generating combinatorial objects: Transform and Conquer, presorting, Heap and Heap sort
12	Optimization Problems: Reductions, Reduction to Graph Problems
BLOCK 5 : BACKTRACKING AND GRAPH TRAVERSALS	
13	General method: 8 queens problem, sum of subsets, Graph colouring, Hamiltonian cycle, Branch and Bound, assignment problem, knapsack problem, travelling salesman pobles
14	Graph traversals: connected components, spanning trees, NP hard and NP complete problems

Course Code	Title of the Course
34112	APPLIED MATHEMATICS FOR COMPUTER SCIENCE

Course objective

- To understand the basics of normal forms
- To understand the concept of graph theory

Course outcome

- Able to understand the graph theory
- Able to know transportation problem and solutions

Unit No. Contents

BLOCK 1: INTRODUCTION

- 1 Logic : TF statements, connectives, atomic and compound statements,
- 2 WFF, truth table of a formula,
- 3 Tautology, tautological implications and equivalence of formulae

BLOCK 2 : NORMAL FORMS

- 4 Principal normal forms
- 5 Theory of inference, open statements, quantifiers, valid formulae and equivalence,
- 6 Theory of inference for predicate calculus

BLOCK 3 : GRAPH THEORY

- 7 Basics concept of graph theory
- 8 Matrix representation of graphs
- 9 Trees : Definition, Spanning trees, Rooted trees, Binary trees

BLOCK 4 : LINEAR PROGRAMMING PROBLEM

- 10 Mathematical foundations, graphical solutions
- 11 Slack of variables, simplex method, two phase method

BLOCK 5 : TRANSPORTATION PROBLEM

- 12 Transportation table, solutions of transportation problem
- 13 Testing for optimality, assignment problem
- 14 The assignment method, special cases in assignment problems

Text Books:

1. Discrete Mathematics – Dr. M.K.Venkataraman, Dr N.Sridharan, N.Chandrasekaran- The National Publishing Company – Reprint 2003 (Unit I, II and III)
2. Operation Research – Kantiswarap, P.K.Gupta, Man Mohan- Sultan Chand & Sons – Reprint 2011.

Course Code	Title of the Course
34113	ADVANCED JAVA PROGRAMMING

Course Objective

- To understand the advanced concepts in Java Programming
- To understand Internetworking using Java Programming

Course Outcome

- Able to write Programs using JDBC concept
- Able to write Servlet Programs

Unit No. Contents

BLOCK 1: INTRODUCTION

- 1 Introduction : JDBC overview, connection class, meta data function
- 2 SQL Exception, SQL warning
- 3 Statement, Result set, Other JDBC classes

BLOCK 2 : INETADDRESS

- 4 Inetaddress, TCP/IP client sockets, TCP/IP server sockets
- 5 URL, URL connection, Data grams
- 6 Client/Server applications using RMI

BLOCK 3 : BDK AND DESIGN PATTERNS

- 7 Bean Development Kit, JAR files, Introspection
- 8 Design Patterns for properties, Events and methods
- 9 Constrained Properties, Persistence, Customizers

BLOCK 4 : SERVLETS

- 10 Life cycle of servlet, Generic Servlet, HTTP servlet
- 11 Reading Initialization, Parameters, Reading Servlet Parameters
- 12 Cookies, Session Tracking

BLOCK 5 : JAPPLET AND AWT CLASSES

- 13 JApplet, Buttons, Combo, Trees, Tables, Panes
- 14 AWT Classes, Working with Graphics, Color and Font

Text Books:

1. Patrick Naughton & Herbert Schildt, "The Complete Reference: Java 2", Tata
2. McGraw Hill, 1999. (Chapter - 18, 21, 24, 25, 26, 27)

3. Joseph Weber, "Using Java 2 Platform", Prentice Hall of India, 2000.
(Chapter - 39, 40)

Books for Reference:

1. Deitel & Deitel, "Java How to Program", Prentice Hall, 5th Edition ,2002
2. Peter Hagggar, "Practical Java: Programming Language Guide", Addison-Wesley Pub Co, 1st Edition, 2000

Course Code	Title of the Course
34114	LAB – ADVANCED JAVA PROGRAMMING

Course Objective:

- To understand to write applet programs
- To understand JDBC application programs

Course Outcome:

- Able to develop Client/Server application programs using RMI
- Develop chat server using Java

Unit No.

Contents

BLOCK 1: INTRODUCTION

1

Simple Java program

2

Program using JDBC with create, insert table data

3

SQL Exception, SQL Warning

BLOCK 2 : INETADDRESS

4

Programs using TCP/IP client sockets, TCP/IP server sockets

5

Program with URL, URL connection, Data grams connection

6

Client/Server applications using RMI

BLOCK 3 : BDK AND DESIGN PATTERNS

7

Simple programs using Bean Development Kit, JAR files

8

Program with Design Patterns,

9

Program with Events and methods

BLOCK 4 : SERVLETS

10

Create a servlet to read the parameters

11

Programs using cookies

12

Programs with session tracking

BLOCK 5 : JAPPLET AND AWT CLASSES

13

Programs using JApplet, Buttons, Combo, Trees, Tables, Panes

Programs with AWT Classes, Working with Graphics, Color and Font

Reference Books

1. Joseph Weber, "Using Java 2 Platform" PHI, 2000

II Semester

Course Code	Title of the Course
341 21	COMPUTER SYSTEM ARCHITECTURE

Course Objective:

- To understand the computer system architecture, design
- To understand the Instruction Level Parallelism, memory optimizations

Course Outcome:

- Able to learn the computer design
- Able to learn the memory optimization, storage systems

Unit No. Contents

BLOCK 1: FUNDAMENTALS

- 1 Introduction : Definition, trends, power in IC, cost
- 2 Performance : Dependability, measuring, reporting and summarizing performance
- 3 Quality: Quality principles of computer design, performance

BLOCK 2 : ILP CONCEPTS

- 4 Introduction: concepts and challenges, Basic computer techniques for exposing ILP, reducing branch costs with prediction, data hazards
- 5 Scheduling : dynamic scheduling, hardware based speculation, multiple issue and static scheduling, advanced techniques for instruction delivery and speculation
- 6 Limitations of ILP: hardware and software speculation, multithreading

BLOCK 3 : THREAD LEVEL PARALLELISM

- 7 Multiprocessor and thread level parallelism: Introduction, symmetric shared memory architecture
- 8 Performance and architectures: performance of symmetric shared memory multiprocessors, Distributed shared memory architectures
- 9 Synchronization models: synchronization, model of memory consistency, cross cutting issues

BLOCK 4 : MEMORY HIERARCHY DESIGN

- 10 Introduction : Optimization of cache performance, memory technology and optimizations
- 11 Protection: virtual memory and virtual machines
- 12 Issues : crosscutting issues in the design of memory hierarchies

BLOCK 5 : STORAGE SYSTEMS

- 13 Introduction : advanced topics in Disk storage, real faults and failures, I/O performance, reliability measures and benchmarks
- 14 Issues : a little queuing theory, crosscutting issues, designing and evaluating and I/O system, the Internet Archive Cluster

Course Code	Title of the Course
341 22	DISTRIBUTED OPERATING SYSTEMS

Unit No.	Contents
	BLOCK 1: FUNDAMENTALS
1	Introduction : what is distributed operating system, Evolutions, models
2	Issues in designing distributed computing system
3	Introduction to computer networks: Network types, LAN, WAN, communication protocols, Internetworking, ATM technology
	BLOCK 2 : MESSAGE PASSING
4	Introduction: features, issued in PC message passing, synchronization
5	Buffering, mult Datagram messages, Encoding and Decoding
6	Process addressing, failure handling, group communication
	BLOCK 3 : DISTRIBUTED SHARED MEMORY
7	Introduction: General architecture of DSM system, Design and implementation issues of DSM, Granularity, structure of shared memory consistency models, Replacement strategy, Thrashing
8	Other approaches to DSM, Heterogeneous DSM, advantages
9	Synchronization: Introduction, clock synchronization, Event ordering, mutual Exclusion, Deadlock, Election algorithm
	BLOCK 4 : DISTRIBUTED FILE SYSTEM
10	Introduction : Desirable features, file modes, file accessing models
11	File sharing semantics, file caching schemes, file replication
12	Fault Tolerance, atomic transaction, Design principles

BLOCK 5 : SECURITY

- 13 Introduction : potential attacks to computer system,
cryptography,
authentication
- 14 Access control, Digital Signatures, Design Principles

Course Code	Title of the Course
341 23	.NET PROGRAMMING

Course Objective:

- To understand the .NET frameworks
- To understand the object oriented programming concepts in an .Net technology

Course Outcome:

- Able to learn visual basic .Net from basics to file handling
- Able to learn the ADO.Net and security models

Unit No. Contents

BLOCK 1: .NET FRAMEWORKS

- 1 Introduction: CLR, namespace, assemblies, class library
- 2 Basic Terminology: .Net component, .Net garbage collection
- 3 Oops concept: class, objects, structures, modules, abstraction, encapsulation, inheritance, polymorphism, overloading, overriding, shadowing

BLOCK 2 : VISUAL BASIC.NET

- 4 **Introduction:** Data types, operators, arrays, dynamic arrays, String handling
- 5 Control statements: Conditional and looping statements, sub procedures and functions
- 6 Windows Forms: MDI form, events, msgbox, inputbox, Dialogboxes, passing forms, RichTextBoxes, Labels, Link labels

BLOCK 3 : WINDOWS CONTROLS

- 7 Introduction: Buttons, checkbox, radio buttons, panel, list boxes, combo boxes, scrollbars, splitters, track bars, pickers, notify icons, timers, menus
- 8 Tree and list view: toolbars, status bars, progress bars, tab controls
- 9 Debugging and Error Handling: Types of errors, Exceptions and structured ExceptionHandling

BLOCK 4 : ASP.NET

- 10 Introduction: file types, Importing namespaces, usage of Global.asax file, The page class, HttpRequest, HttpResponse, Server Utility

- 11** Basic web controls: List controls, validation and Rich controls, Data controls, custom controls
- 12** Overview of AJAX controls

BLOCK 5 : ADO.NET

- 13** Introduction: Database access in the Internet world, characteristics, Data objects, Data namespace
- 14** SQL Basics: Data binding controls, Data set, Data table, Data row, data column, data list, data grid

Course Code	Title of the Course
341 24	LAB – .NET PROGRAMMING

Unit No. Contents

BLOCK 1: .NET FRAMEWORK

- 1 Programs using variables, constants and data types
- 2 Programs using arrays and dynamic arrays
- 3 Program using control flow statement

BLOCK 2 : VISUAL BASIC.NET

- 4 Programs using functions and procedures, MDI forms, events
- 5 Programs using msgbox, inputbox, dialog boxes, working with multiple forms
- 6 Anchoring and docking controls, event handling, RichTextBoxes

BLOCK 3 : WINDOWS CONTROLS

- 7 Programs using windows common controls
- 8 Programs using menus, built in dialog boxes, Image lis, tree and list views
- 9 Programs using toolbars, statusbars, progressbars, tab controls, graphics and file handling

BLOCK 4 : ASP.NET

- 10 Writing ASP programs using HttpRequest and HttpResponse
- 11 Develop an application for ASP web controls, list controls, validation and rich controls, Data controls
- 12 Develop an application for HTML server controls, custom controls, logging and error handling

BLOCK 5 : ADO.NET

- 13 Database applications using ADO.NET
- 14 Accessing a database using SQL commands, Data binding controls, DataList

Text Book:

1. Visual Basic .Net programming, Steve Holzner, Dreamtech press.
2. The complete reference for ASP.Net, Mathew macdonald, TMH

Books for Reference:

1. Visual Basic .Net programming Bible, Bill Evjen, JasonBeres, Wiley dreamtech press.

III SEMESTER

Course Code	Title of the Course
341 31	CRYPTOGRAPHY AND NETWORK SECURITY

Course Objective:

- To understand the computer security concepts
- To understand the Data Encryption Standard mechanism

Course Outcome:

- Able to know AES, RSA cryptography principles
- Able to know Digital Signatures, E-mail security

Unit No. Contents

BLOCK 1: COMPUTER SECURITY INTRODUCTION

- 1 Introduction: The OSI security architecture, security attacks,
- 2 security services, security mechanisms, A model for network security
- 3 Classical Encryption Techniques: symmetric cipher model, substitution techniques

BLOCK 2 : BLOCK CIPHERS AND DES

- 4 Block cipher principle, the data encryption standard, The strength of DES,
- 5 Differential and Linear cryptanalysis, Block cipher design principles
- 6 Advanced Encryption Standard: Finite Field arithmetic , AES structure, AES transformation function, Implementation

BLOCK 3 : PUBLIC KEY CRYPTOGRAPHY AND RSA

- 7 Principles of public-key cryptosystems, The RSA algorithms
- 8 Other public key cryptosystems: Diffie-Helman key Exchange, Elgamel cryptographic system
- 9 Elliptic curve cryptography, pseudorandom number generation based on asymmetric cipher

BLOCK 4 : MESSAGE AUTHENTICATION CODES

- 10 Message authentication requirements, functions, message authentication Codes
- 11 Security of MACs, MAC based Hash functions, MAC based ciphers
- 12 Digital Signatures: ElGamal Digital Signature scheme, schnorr digital

signature schemes, digital signature standard

BLOCK 5 : TRANSPORT LEVEL SECURITY

- 13** Web security considerations, Socket layer and transport layer and transport layer security
- 14** Electronic mail security: pretty good privacy, IP security overview, IP security policy, encapsulating security payload

Text Book:

1. William Stallings, "Cryptography and Network Security Principles and Practice", Pearson, 5th Edition.

Book for Reference:

1. William Stallings - "Data Communication" - Pearson

Course Code	Title of the Course
341 32	CLOUD COMPUTING

Course objective:

- To understand service oriented architecture and virtual storage applications

Course outcome:

- Able to know cloud computing Environments
- Able to know cloud virtualization technology

Unit No. Contents

BLOCK 1: CLOUD COMPUTING BASICS

- 1 Introduction: History, working with cloud computing, pros and cons of cloud computing, Benefits,
- 2 Developing cloud services, pros and cons of cloud service development, types of cloud service development
- 3 Discovering cloud services development services and tools

BLOCK 2 : CLOUD COMPUTING FOR EVERYONE

- 4 Centralizing Email communications, collaborating to-do lists
- 5 Collaborating on household budgets, contact lists, communications across Community
- 6 Collaborating on schedules, collaborating on group project and events, cloud computing for corporation

BLOCK 3 : CLOUD SERVICES

- 7 Exploring on-line calendar applications, Exploring online scheduling applications, Exploring online planning and task management
- 8 Collaborations with event management, contact management, project management, word processing and databases
- 9 Storing and sharing files and other online content

BLOCK 4 : CLOUD COMPUTING ENVIRONMENT

- 10 Classification of cloud Implementation, Amazon web services, IaaS, VMware vCloud, Google AppEngine,PaaS, Windows Azure Platform, SaaS/PaaS, Microsoft Live

- 11 Comparison of cloud computing platforms

BLOCK 5 : CLOUD VIRTUALIZATION TECHNOLOGY

- 12 Introduction : Virtualization Defined, Benefits, server virtualization
- 13 Hypervisor management software, Logical Partitioning, VIO Server, virtual Infrastructure requirements
- 14 Cloud virtualization: Introduction, storage virtualization, Storage area networks, cloud server virtualization, virtualized Data Centre

Text Book:

1. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.

Book for Reference:

1. Haley Beard, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs, Emereo Pty Limited, July 2008.

Objective:

- To understand the wide range of web technologies both client side and server side to provide exposure to the students in developing Rich Internet Applications.

Course Outcome:

- Able to know client side and server side programming

Unit No. Contents

BLOCK 1: HTML,XHTML AND STYLE SHEETS

- 1** **Introduction:** HTML, XML and WWW, Basic HTML, document Body, text, hyperlinks
- 2** Lists, using color and images, tables, multimedia objects
- 3** Style sheets: using styles, examples, formatting blocks of information

BLOCK 2 : CLIENT SIDE PROGRAMMING

- 4** Introduction: Dynamic HTML, Java script, variables, string manipulations, mathematical functions, operators, arrays, functions
- 5** Regular expressions, cookies and Events
- 6** Dynamic HTML with Java script: Data validation, messages and confirmations, writing to a different frame, Rollover buttons, moving images

BLOCK 3 : HOST OBJECTS

- 7** Browsers and DOM, DOM history and levels, Intrinsic event handling,
- 8** Representing web Data: XML, Documents and vocabularies, versions and declarations, namespaces
- 9** Java script and XML: Ajax, DOM based XML processing, SAX,XSL,XSLT,XPATH

BLOCK 4 : SERVER SIDE PROGRAMMING

- 10** Java Servlets, history of web applications, The power of Servlets, HTTP servlet basics, the servlet API, page generations
- 11** The servlet Lifecycle: The servlet alternative, servlet reloading, Init and Destroy, single thread model, background processing, load on startup,

client side caching, server side caching

12 Retrieving information: the servlet, the server, the client

BLOCK 5 : JSP TECHNOLOGY

13 Introduction: Need, HTTP and servlet basics, HTTP request/response model, Servlets, anatomy of a JSP page, JSP application design with MVC

14 Setting up JSP Environment: Installing the JSDK, Installing Tomcat server, testing tomcat, creating, installing, running a JSP page

Text Books:

1. Web Programming: Building Internet applications, Chris Bates, Wiley India
2. Web technologies – A computer science perspective, Jeffrey C Jackson, Pearson Education,2006
3. Java server pages, Hans Bergsten, o'reilly,2010

Reference Books:

1. Robert W.Sebesta “Programming the world wide web” Pearson Education
2. Java servlet Programming, Joson Hunter, o'Reilly,2010
3. Bates, Developing web applications, wiley,2006.

Course Code	Title of the Course
341 34	LAB – WEB TECHNOLOGY

Course Objective:

- To understand the wide range of web technologies both client side and server side to provide exposure to the students in developing Rich Internet Applications.

Course Outcome:

- Able to develop client side and server side programming

Unit No. Contents

BLOCK 1: HTML,XHTML,STYLESHEETS

- 1** Programs using Basic HTML, text and hyperlinks
- 2** Programs using multimedia objects, XHTML
- 3** Programs using Style sheets

BLOCK 2 : CLIENT SIDE PROGRAMS

- 4** Programs using JavaScript, Dynamic HTML, operators, arrays, cookies
- 5** Programs using Java script data validation, messages and confirmations
- 6** Programs using Rollover Buttons, writing to a Different frame, moving images

BLOCK 3 : BROWSERS AND DOM

- 7** Programs using Intrinsic event handling, document tree
- 8** Representing web data, XML
- 9** Programs using Java script and XML, XSL, XSLT

BLOCK 4 : SERVER SIDE PROGRAMS

- 10** Programs with simple Java Servlets
- 11** Programs with Init and Destroy, single thread model, client side caching and server side caching
- 12** Programs using Retrieving information from The Servlet-The Server-The Client

BLOCK 5 : JSP PROGRAMS

- 13** Programs with simple JSP applications
- 14** Developing a program to access a database from a JSP page

Text Books:

1. Web Programming: Building Internet applications, Chris Bates, Wiley India
2. Web technologies – A computer science perspective, Jeffrey C Jackson, Pearson Education,2006
3. Java server pages, Hans Bergsten, o'reilly,2010

Reference Books:

1. Robert W.Sebesta “Programming the world wide web” Pearson Education
2. Java servlet Programming, Joson Hunter, o'Reilly,2010
3. Bates, Developing web applications, wiley,2006.

IV SEMESTER

Course Code	Title of the Course
34141	DATA MINING AND WAREHOUSING

Course objective:

- To learn design of data store of warehousing, Retrieving and mining information of warehouse

Course outcome:

- Able to know data mining techniques and trends
- Able to know associative rules, clustering techniques and web mining.

Unit No. Contents

BLOCK 1: DATA WAREHOUSING

- 1 Introduction: definition, architecture, warehouse schema, warehouse server, OLAP operations
- 2 Data warehouse technology: Hardware and operating system, warehousing software, Extraction tools, Transformation tools
- 3 Case studies: data warehousing in Government, tourism, Industry, Genomics data

BLOCK 2 : DATA MINING

- 4 Introduction: definition, techniques, current trends in data mining
- 5 Different forms of knowledge: Data selection, cleaning, Integration, Transformation, Reduction and Enrichment
- 6 Data : types of data, data quality, data preprocessing, measures of similarity and dissimilarity, Exploration, summary statistics, visualization

BLOCK 3 : ASSOCIATION RULES

- 7 Introduction: methods to discover association rule, apriori algorithm partition algorithm, pincher search algorithm
- 8 Dynamic Item set algorithm, FP Tree growth algorithm
- 9 Classification: Decision tree classification, bayesian classification, classification by Back propagation

BLOCK 4 : CLUSTERING TECHNIQUES

- 10** Introduction: clustering paradigms, partitioning algorithms, K means & K mediod algorithms, CLARA, CLARANS, Hierarchial clustering, DBSCAN,BIRCH, clustering algorithms, STIRR, ROCK, CACTUS
- 11** Machine Learning: supervised learning, unsupervised learning, machine learning and data mining
- 12** Neural networks: Introduction, use of NN, working of NN Genetic algorithm

BLOCK 5 : WEB MINING

- 13** Introduction : web content mining, web structure mining, web usage mining, text mining, Text clustering, Temporal, spatial, visual data mining, knowledge mining
- 14** Tools and techniques: using weka, Rapidminer and matlab

Text Book:

1. Arun K Pujari, Data mining Techniques, University press,2008
2. CSR Prabhu, Data warehousing-concepts, techniques and applications, Prentice Hall of India.

Book for Reference:

1. Jaiwan han, Michelinne Kamar, Data Mining: Concepts and Techniques, Harcourt India/Morgan Kauffman Publishers ,2008
2. Alex Berson, Stephen J Smith, Data warehousing, data mining&OLAP, TMH, 2004.

Course Code	Title of the Course
34142	MOBILE APPLICATION DEVELOPMENT

Course objective:

- To provide an overall knowledge about mobile devices, communication methodologies and its application development

Course outcome:

- Able to know mobile ecosystem, mobile information architecture
- Able to know J2ME architecture and development and case studies

Unit No. Contents

BLOCK 1: MOBILE ECOSYSTEM

- 1 Introduction: The mobile ecosystem, operators, networks
- 2 Devices : platforms, operating systems
- 3 Applications : application frameworks, applications, services

BLOCK 2 : MOBILE DEVICE PROFILES

- 4 Categories : SMS, mobile websites, mobile web widgets
- 5 Native applications: Games, utility apps, location based services(LBS)
- 6 Apps : Informative apps, Enterprise apps

BLOCK 3 : MOBILE INFORMATION ARCHITECTURE

- 7 Introduction : sitemaps, click streams, wireframes, prototyping, architecture
- 8 Mobile design : Interpreting design, Elements of mobile design
- 9 Mobile design tools : Designing for different device/ screens

BLOCK 4 : J2ME

- 10 Introduction : J2ME architecture and development environment, small computing device requirements, Run-time environment, MIDlet programming
- 11 Languages : J2ME, J2ME SDK, J2ME wireless toolkit

BLOCK 5 : CASE STUDY

- 12 Introduction : Google Android introduction, Android development Environment
- 13 Development framework, SDK, Eclipse, Emulator, Android AVD
- 14 Project framework: Apple IOS, RIM Blackberry, Samsung Bada, Nokia Symbian, Microsoft windows phone

Text Book:

1. Brian Fling, Mobile Design and Development, OReilly media,2009.
2. James Keogh, J2ME, The Complete Reference, TataMcHill,2003

Book for Reference:

1. Pei zheng and Lionel Ni, Smart phone and Next Generation Mobile Computing, Elsevier, 2006
2. Mark L.Murphy, Beginning Android”, Apress 2009.

Course Code	Title of the Course
34143	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

Course objective:

- To familiarize the basic concepts in artificial intelligence
- To understand the basic concepts in expert systems

Course outcome:

- Apply forward and backward reasoning algorithms, searching algorithms and optimization algorithms to create problem solving agents.
- Represent knowledge using propositional logic, inference rules and Bayesian networks.
- Design simple expert systems.
- Design algorithms for robotics and machine vision.

Unit No. Contents

BLOCK 1: PROBLEMS AND SEARCH

- 1 Introduction: Concept of AI, approaches –Application areas
Problem formulation- -Forward & Backward reasoning-Graphs & Trees
- 2 Measuring Problem solving agents: problem solving performance
- 3 Search Strategies-local search algorithms and optimization problems, Genetic Algorithms, terminology.

BLOCK 2 : KNOWLEDGE REPRESENTATION

- 4 Relational knowledge & Procedural knowledge Propositional Logic – Syntax & semantics –Inference rules –Inference methods
- 5 Knowledge engineering process –Handling uncertain knowledge
- 6 Bayesian networks –Learning –Pattern recognition.

BLOCK 3 : KNOWLEDGE BASED SYSTEMS

- 7 Expert systems–Components, Characteristic features of expert systems
- 8 Rule based system architecture-Using domain knowledge
- 9 Expert system shell -Explaining the reasoning and knowledge acquisition- Applications

BLOCK 4 : AI IN ROBOTICS

- 10** State space search -Block word & robot example -Path selection -Monkey & Banana problem AND –OR graph -Means end analysis in a robotic problem - Robot problem solving as a production system -Triangle table-Robot learning
- 11** Robot task planning -Phases in task planning -Symbolic spatial relationships - Obstacle avoidance -Graph planning.

BLOCK 5 : MACHINE VISION

- 12** Introduction –Functions in a vision system –Imaging devices –Lighting–A-D conversion–Quantization–Encoding image storage–Image data reduction
- 13** Segmentation techniques –Feature extraction –object recognition
- 14** Training the vision system –Robotic applications of machine vision

Text books

- 1 .Stuart Russel, Peter Norvig,“Artificial Intelligence: A Modern Approach-2/e”,2003,Pearson Education.
2. Elaine Rich, Kevin Knight,“Artificial Intelligence”2/e,1991, TMH.

References

1. Dan W.Patterson, “Introduction to Artificial Intelligence & Expert Systems”, Seventh Indian Reprint 1999, EEE, PHI.

Course Code	Title of the Course
34144	PROJECT

1. The students will be allowed to work an any project based on the concepts studied in core courses
2. The following list of parameters taken into account for the evaluation of project work. Total marks: 100 (Internal : 25 marks, External:75 marks)

M.Sc –(Information Technology)

S.No	Subject Code	Title of the course	CIA Marks Max.	ESE Marks Max.	Total Marks Max.	C Max.
FIRST YEAR						
I SEMESTER						
1	31311	Computer Organization and Architecture	25	75	100	4
2	31312	Object Oriented Programming and Java	25	75	100	4
3	31313	Data Structures and Algorithms	25	75	100	4
4	31314	Object Oriented Programming and Java Lab	25	75	100	4
		Total	100	300	400	16
II SEMESTER						
5	31321	Data Mining and Warehousing	25	75	100	4
6	31322	Relational Database Management Systems (RDBMS)	25	75	100	4
7	31323	Visual Programming with •NET	25	75	100	4
8	31324	VB•NET & RDBMS Lab	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III SEMESTER						
9	31331	Open Source Software	25	75	100	4
10	31332	Operating Systems	25	75	100	4
11	31333	Computer Networks	25	75	100	4
12	31334	Open Source Lab	25	75	100	4
		Total	100	300	400	16
SEMESTER IV						
13	31341	Web Technology	25	75	100	4
14	31342	Software Engineering	25	75	100	4
15	31343	Cloud Computing	25	75	100	4
16	31344	Web Technology Lab	25	75	100	4
		Total	100	300	400	16
		Grand Total	400	1200	1600	64

**Detailed Syllabi FIRST YEAR
SEMESTER I**

Course Code	Title of the Course
31311	COMPUTER ORGANIZATION AND ARCHITECTURE

Course Objectives:

- To have a thorough understanding of the basic structure and operation of a digital computer.
- To discuss in detail the operation of the arithmetic unit including the algorithms & implementation of fixed-point and floating-point addition, subtraction, multiplication & division.
- To study the different ways of communicating with I/O devices and standard I/O interfaces.
- To study the hierarchical memory system including cache memories and virtual memory.

Course Outcomes:

Students will have thorough knowledge about

- Basic structure of a digital computer
- Arithmetic operations of binary number system
- The organization of the Control unit, Arithmetic and Logical unit, Memory unit and the I/O unit.

**Unit
No. Contents**

BLOCK 1 : DIGITAL LOGIC CIRCUITS:

- 1 Introduction :** Digital computers – Logic gates – Boolean algebra – Map simplification
- 2 Combinational circuits** – Flip-flops
- 3 Digital Components:** Integrated circuits – Decoders – Multiplexers – Registers.

BLOCK 2 : DATA REPRESENTATION

- 4 Introduction :** Data types – Complements – Fixed point representation – Floating point representation.
- 5 Register Transfer and Microoperations:** Register transfer language – Register transfer – Bus and memory transfers –
- 6 Arithmetic microoperations** – Logic Microoperations – Shift Microoperations – Arithmetic logic shift unit.

- BLOCK 3 : BASIC COMPUTER ORGANIZATION AND DESIGN:**
- 7 **Instruction codes** – Computer registers – Computer instructions – Timing and control – Instruction cycle – Memory reference Instructions – Input-output and interrupt.
- 8 **Central Processing Unit:** Introduction – General register organization – Stack organization –
- 9 **Instruction formats** – Addressing modes – Data transfer and manipulation – Program control.
- BLOCK 4 : COMPUTER ARITHMETIC**
- 10 **Introduction** – Addition and subtraction – Multiplication algorithms – Division algorithms – Floating-point arithmetic operations –
- 11 **Input-Output Organization:** Peripheral devices – Input output interface – Asynchronous data transfer
- 12 **Input-Output Organization:** Modes of transfer – Priority interrupt – Direct memory Access, Input-Output Processor.
- BLOCK 5 : MEMORY ORGANIZATION**
- 13 **Memory Organization:** Memory Hierarchy – Main memory – Auxiliary memory – Associative memory –
- 14 **Other Memory:** Cache memory – Virtual memory – Memory management hardware.

Text Book:

M. Morris Mano, Computer System Architecture, Prentice Hall of India Pvt Ltd, Third edition, 2002. ISBN: 81-203-0855-7.

Reference Books:

1. William Stallings, Computer Organization and Architecture – Designing for Performance, 6th Edition, Pearson Education, 2003.
2. Nicholas Carter, Schaum's outline of Computer Architecture, Tata McGraw Hill, 2006,
3. John L. Hennessy and David A Patterson, Computer Architecture A quantitative Approach, Morgan Kaufmann / Elsevier, Fourth Edition, 2007
4. Mohammed Rafiquzzaman and Rajan Chandra, Modern Computer architecture, Galgotia Publications Pvt. Ltd., 2010
5. V.Rajaraman and T.Radhakrishnan, An Introduction to Digital computer Design, PHI Ltd, 2009.

Course Code	Title of the Course
31312	OBJECT ORIENTED PROGRAMMING AND JAVA

Course Objectives:

- To provide an overview of working principles of object oriented paradigm
- To understand and apply the OOPs fundamentals
- To implement the features of OOP in real world applications

Course Outcome:

- Able to understand the object oriented programming techniques
- Able to implement, compile, test and run Java program,
- Able to make use of hierarchy of Java classes to provide a solution to a given set of requirements found in the Java API

Unit No.

Contents

BLOCK 1 : FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING

- 1 **Basic concepts** of OOP – Benefits – Applications . Java Evolution: Features – how java differs from C and C++ - java and internet- java support system – java environment
- 2 **Overview of Java Language** –Introduction – Simple Java Program – Comments – Java Program Structure – Tokens – Java Statements – Implementing a Java Program – JVM – Command Line Arguments. Constants – Variables – Data Types – Type Casting..
- 3 **Operators and Expressions:** Arithmetic Operators – Relational, Logical, Assignment, Increment and Decrement, Conditional, Bitwise, Special Operators – Arithmetic Expressions, Evaluation of Expression – Precedence of Arithmetic Operators – Type Conversions – Operator Precedence and associativity – Mathematical Functions.
Decision Making and Branching: If –if.....else –Nesting of if..... Else – else if–switch. Decision Making and Looping: While – do – for – jump in loops – labeled loops.

BLOCK 2 : CLASSES, OBJECTS AND METHODS

- 4 **class:** Defining a class –fields –methods –creating objects – accessing class members – constructors – methods overloading –static members –nesting of methods – Inheritance –overriding methods –final variables-classes –methods
- 5 **Arrays, Strings and Vectors** :One dimensional Arrays –creating of array – Two dimensional arrays- strings –vectors –Wrapper classes – Enumerated Types - Interfaces: Multiple Inheritance
- 6 **Packages:** Defining interface –Extending interfaces – Implementing Interfaces - Putting Classes Together

BLOCK 3 MULTITHREADED PROGRAMMING

- 7 **Introduction :** creating Threads –Extending the thread class –Stopping and Blocking a thread –Life cycle of a thread –using thread methods
- 8 **Thread Exceptions** –Priority –Synchronization –Implementing the ‘Runnable’ Interface

9 BLOCK 4 : MANAGING ERROR, EXCEPTION AND APPLETS
Exceptions: Types of errors –Exceptions –Syntax of Exception Handling code –

Multiple Catch statements –using finally statement – Throwing our own Exceptions – using exceptions for Debugging -

10 Graphics Programming: The Graphics Class – Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Charts.

11 Applet Programming: How applets differ from Applications – preparing to write applets – Building Applet Code – Applet life cycle – creating an Executable Applet – Designing a Web Page – Applet Tag – Adding Applet to HTML file – Running the Applet – Passing parameters to Applets – Displaying Numerical values – Getting input from the user

BLOCK 5 : MANAGING INPUT/OUTPUT FILES IN JAVA

12 Introduction – concept of streams –stream classes – byte stream classes – character Stream

13 I/O classes: –using stream –using the file class –Input / output Exceptions – creation of files – Reading / writing characters

14 Reading writing bytes: Random access files- Interactive input and output –Other stream classes

Text Books:

1. R. Krishnamoorthy and S. Prabhu, Internet and Java Programming, New Age International Publishers, 2004 (Unit I).
2. Programming with Java, 4e, E. Balagurusamy, Tata McGraw-Hill, 2010.

Reference books:

1. Deitel, Deitel and Nieto, Internet and World Wide Web – How to program, Pearson Education, 2000.
2. Naughton and H.Schildt, Java 2 - The complete reference, Tata McGraw-Hill, Fourth edition, 2006.
3. Elliotte Rusty Harold, Java Network Programming, O'Reilly Publishers, 2000.
4. B.Mohamal Ibrahim , Java : J2SE – A Practical Approach, Firewall media, 2006.
5. Cay S. Horstmann, Gary Cornell, Core Java, Volume I and II, 5th Edition, Pearson Education, 2003.
6. Topley, J2ME in A Nutshell, O'Reilly Publishers, 2002.
7. Hunt, Guide to J2EE Enterprise Java, Springer Publications, 2004.
8. Ed Roman, Enterprise Java Beans, Wiley Publishers, 1998.

Course Code	Title of the Course
31313	DATA STRUCTURE AND ALGORITHMS

Course Objectives:

- The learner should be well versed with the fundamentals of Algorithms, learn various data structures, should be able to use them appropriately as per need during development of programs.
- Also, the learner should know different sorting and searching techniques so that correct techniques can be used in different programs so that the complexity of the program does not increase due the sorting/ search technique employed.

Course Outcome

After the completion of this course, the student will able to

- To write programs using structures, strings, arrays, pointers and strings for solving complex computational problem.
- Using the data structures real time applications
- Able to analyze the efficiency of Data Structures

Unit No

Contents

BLOCK 1 : INTRODUCTION

- 1** **Introduction to Data Structure** : Types of Data Structure , Primitive data types
Algorithms: –Time and space Complexity of algorithms
- 2** **Arrays:** Array initialization, Definition of Array, Characteristic of Array ,One-dimensional Array, Two-dimensional array and Multi dimensional array

BLOCK 2 : LINEAR DATA STRUCTURE

- 3** **Stack** : Stack related terms, Operations on a stack,
- 4** **Representation of Stack:** Implementation of a stack – application of Stack. Expression Evaluation Polish notation.
- 5** **Queues:** Operations on queue Circular Queue, Representation of Queues, Application of Queues
- 6** **List:** Merging lists, Linked list, Single linked list, Double Linked List, Header Linked list
- 7** **Operation on Linked List** : Insertion and Deletion of linked list
- 8** **Traversal:** Traversing a linked list , Representation of linked list.

BLOCK : 3 NON-LINEAR DATA STRUCTURE

- 9** **Trees:** Binary Trees, Types of Binary trees, Binary Tree Representation
- 10** **Binary Tree operations / Applications** : Traversing Binary Trees, Binary Search tree,
- 11** **Operations on Binary Tree:** Insertion and Deletion operations, Hashing Techniques.

	BLOCK 4 : SEARCHING TECHNIQUES
12	Searching : Introduction, Searching, Linear Search, Binary Search
	BLOCK 5 : SORTING TECHNIQUES
13	Sorting: Bubble sort, Insertion sort, Radix sort
14	Other sorting Techniques: Selection sort, Quick sort, Tree sort.

Text Books:

1. Fundamentals of Data structures, Second edition, Ellis Horowitz and Sartaj Sahini, Universities press, 2007.
2. Data Structures, Seymour Lipschutz, G.A.Vijayalakshmi Pai, Second Edition , Schaum's Outlines, Tata Mc-Graw Hill Private Ltd., 2006.

Reference Books:

1. Programming and Data Structure, Pearson Edition, Ashok N Kamthane, 2007.

Course Code	Title of the Course
31314	OBJECT ORIENTED PROGRAMMING AND JAVA LAB

Course Objective:

- To understand the basic concepts of Object Oriented Programming
- To understand console and internet programming (applets) using Java

Course Requirement:

- Basic concepts of Web and Java programming

Course Outcome:

- Explore markup languages features and create interactive web pages using them
- Able to design front end web page and connect to the back end databases.
- Able to do Object oriented programming to solve the problems

Experiments based on Internet Programming Theory

Unit No.	Contents
	BLOCK 1 : JAVA FUNDAMENTAL PROBLEMS:

1	Simple Java Problems
2	class and objects
3	Conditional control using java
4	Looping using java
	BLOCK 2 : OOP CONCEPTS
5	Function overloading programs
6	Operator overloading programs
7	Inheritance programs, Packages
8	Polymorphism programs Message passing programs
	BLOCK 3 : THREAD & VIRTUAL FUNCTION
9	Threads
10	Virtual function programs
	BLOCK 4 : I/O AND EXCEPTION HANDLING
11	Exception handling programs
12	I/O manipulation programs,
	BLOCK 4 :NETWORK PROGRAMMING
13	Applet programs
14	Implementation of simple network programs using java

Reference books:

1. R. Krishnamoorthy and S. Prabhu, Internet and Java Programming, New Age International Publishers, 2004 (Unit I).

2. Programming with Java, 4e, E. Balagurusamy, Tata McGraw-Hill, 2010.
3. Deitel, Deitel and Nieto, Internet and World Wide Web – How to program, Pearson Education, 2000.
4. Naughton and H.Schildt, Java 2 - The complete reference, Tata McGraw-Hill, Fourth edition, 2006.
5. Elliotte Rusty Harold, Java Network Programming, O'Reilly Publishers, 2000.
6. B.Mohamal Ibrahim , Java : J2SE – A Practical Approach, Firewall media, 2006.
7. Cay S. Horstmann, Gary Cornell, Core Java, Volume I and II, 5th Edition, Pearson Education, 2003.
8. Topley, J2ME in A Nutshell, O'Reilly Publishers, 2002.
9. Hunt, Guide to J2EE Enterprise Java, Springer Publications, 2004.
10. Ed Roman, Enterprise Java Beans, Wiley Publishers, 1998.

SEMESTER II

Course Code	Title of the Course
31321	DATA MINING AND WAREHOUSING

Course Objective:

- This course presents on depth of to data mining techniques; association rule, clustering, classification, web mining, temporal and sequential data mining and provide a practical exposure using data mining tool orange.
- To enable the students to learn the basic functions, principles and concepts of Data Mining
- To understand the fundamentals of Big Data Analytics

Course Requirements:

- Basic Concepts of Database

Course Outcome:

On successful completion of the course the students should have:

- Understand the data mining techniques, classification and web mining

Unit No. Contents

BLOCK 1 : DATA MINING AND WAREHOUSING INTRODUCTION

- 1 Data Warehousing Introduction** – Definition-Architecture-Warehouse Schema-Warehouse server-OLAP operations. Data Warehouse technology – Hardware and operating system
- 2 Data Mining** - Definition – DM Techniques – current trends in data mining - Different forms of Knowledge – Data selection, cleaning, Integration, Transformation, Reduction and Enrichment.
- 3 Data:** Types of data - Data Quality - Data Preprocessing - Measures of similarity and dissimilarity. **Exploration:** Summary statistics – Visualization.

BLOCK 2 : ASSOICATION RULE MINING AND CLASSIFICATION

- 4 Association rules:** Introduction – Methods to discover association rule – Apriori algorithm Partition Algorithm
- 5 AR Algorithms:** Pincher search algorithm – Dynamic Item set algorithm – FP Tree growth algorithm.
- 6 Classification:** Decision Tree classification – Bayesian Classification – Classification by Back Propagation.

BLOCK 3 : CLUSTERING TECHNIQUES AND MACHINE LEARNING

- 7 Introduction** – Clustering Paradigms – Partitioning Algorithms – K means & K Mediod algorithms – CLARA – CLARANS – Hierarchical clustering – DBSCAN – BIRCH – Categorical Clustering algorithms – STIRR – ROCK – CACTUS.
- 8 Introduction to machine learning** – Supervised learning – Unsupervised learning – Machine learning and data mining.
- 9 Neural Networks:** Introduction – Use of NN – Working of NN Genetic Algorithm: Introduction –Working of GA.

BLOCK 4 : WEB MINING AND VISUAL DATA MINING

- 10 Introduction** –Web content mining – Web structure mining –Web usage mining –Text mining –Text clustering, Temporal mining –Spatial mining

- 11 **Visual data mining** – Knowledge mining – Various tools and techniques for implementation using weka, Rapidminer and Matlab.
- BLOCK 5 : INTRODUCTION TO BIG DATA ANALYTICS**
- 12 **Big Data Characteristics**- Types of Big Data- Traditional Versus Big Data Approach
- 13 **Technologies** Available for Big Data
- 14 **Hadoop** – Introduction - What is Hadoop? - Core Hadoop Components - Hadoop Ecosystem - Physical Architecture - Hadoop Limitations

Text Books:

1. Arun K Pujari, “Data Mining Techniques”, University press, 2008.
2. C S R Prabhu, “Data Warehousing – concepts, techniques and applications “, 2nd Edition, Prentice Hall of India, 2002.
3. Radha Shankarmani, M Vijayalakshmi, “Big Data Analytics”, Wiley Publications, first Edition, 2016

Reference Books:

1. Jaiwei Han, Micheline Kamber, “Data Mining: Concepts and Techniques”, Harcourt India / Morgan Kauffman publishers, 2008.
2. Alex Berson, Stephen J.Smith , “Data Warehousing , Data Mining & OLAP”, Tata McGraw Hill, 2004.
3. Seema Acharya, Subhashini Chellappan, “Big Data and Analytics”, Wiley Publication, first edition. Reprint in 2016
4. DT Editorial Services, “Black Book- Big Data (Covers Hadoop 2, MapReduce, Hive, Yarn, PIG, R, Data visualization)”, Dream tech Press edition 2016.

Course Code	Title of the Course
31322	RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS)

Course Objectives:

- To understand the fundamentals of data models
- To make a study of SQL and relational database design.
- To know about data storage techniques and query processing.
- To impart knowledge in transaction processing, concurrency control techniques and External storage

Course Requirements:

- Knowledge about the basic concepts of the database.

Course Outcome:

- Design a database using ER diagrams and map ER into Relations and normalize the relations
- Acquire the knowledge of query evaluation to monitor the performance of the DBMS.
- Develop a simple database applications using normalization.

Unit No

Contents

BLOCK 1 INTRODUCTION

1 **Data base System Applications**, data base System VS file System – View of Data – Data Abstraction – Instances and Schemas – data Models – the ER Model

2 **Model** :Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor.

3 **History of Data base Systems** - Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model – Conceptual Design for Large enterprises.

BLOCK 2 : RELATIONAL MODEL

4 **Introduction**– Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying / altering Tables and Views.

5 **Relational Algebra** – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews –

6 **Relational calculus** – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

BLOCK 3 : SQL QUERY

7 **Form of Basic SQL Query** – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases. Schema refinement

8 **Normal forms** :Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND,

- THIRD Normal forms – BCNF–
9 **Join:** Lossless join Decomposition – Dependency preserving Decomposition – Schema refinement in Data base Design – Multi valued Dependencies – FORTH Normal Form.

BLOCK 4 TRANSACTION

- 10 **Introduction :**Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation – Testing for serializability
11 **Protocols :** Lock Based Protocols – Timestamp Based Protocols- Validation- Based Protocols – Multiple Granularity.
12 **Recovery and Atomicity** – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage-Advance Recovery systems- Remote Backup systems

BLOCK 5 STORAGE

- 13 **Data on External Storage** – File Organization and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data Structures – Hash Based Indexing – Tree base Indexing – Comparison of File Organizations – Indexes and
14 **Performance Tuning-** Intuitions for tree Indexes – Indexed Sequential Access Methods (ISAM) – B+ Trees: A Dynamic Index Structure.

Text Books:

1. Raghurama Krishnan, Johannes Gehrke, Data base Management Systems, 3rd Edition, TATA McGrawHill.2003.
2. Silberschatz, Korth, Data base System Concepts, 6th Edition, Tata McGraw Hill, 2011.

Reference Books:

1. Relational Database Principles 2nd Edition, Colin Ritchie, 2004
2. Sharad Maheswari and Ruchin Jain, Database management systems Complete Practical Approach, Firewall media, 2006
3. Peter Rob & Carlos Coronel, Data base Systems design, Implementation, and Management, 7th Edition.
4. Elmasri Navrate , Fundamentals of Database Systems, Pearson Education.

Course Code	Title of the Course
31323	VISUAL PROGRAMMING WITH .NET

Course Objective:

- To develop an understanding of Visual Basic .Net
- To develop the skills necessary to create software solutions using VB with .Net
- To learn how to analyze certain types of problems with a software solution in mind

Course Requirements:

- Basic knowledge of Visual Basic

Course Outcome:

- Able to understand and design the solution to a problem using VB. Net
- Understand and implement the features of .Net for providing programmed solutions to complex problems

Unit No Contents

BLOCK 1 : INTRODUCTION

- 1 **Introduction** - What Is Visual Studio ? - Navigating the Visual Studio - The Menu – Toolbar - Work Area
- 2 **Toolbox** - Solution Explorer - Status Bar - Managing VS Windows
- 3 **Visual Studio Project Types** - Windows Projects - Web Projects - Office Projects - SharePoint Projects - Database Projects

BLOCK 2 : C# AND VB.NET

- 4 **Basic Syntax** - Code Skeleton - The Main Method - The Program Class - The First Program Namespace - VS Code Editor - Class and Member Locators – Bookmarks - Running Programs - Primitive Types and Expressions - Enums - Branching Statements - Loops
- 5 **Creating Classes** - Class Inheritance – Class Snippet - Writing Methods - Parameters Passing - Returning Data
- 6 **Method Snippets** - Coding Fields and Properties - Declaring and Using Properties - The Property Snippet

BLOCK 3 : UNDERSTANDING DELEGATES AND EVENTS

- 7 Events - Delegates - Handler Code - Implementing Interfaces - The interface Snippet - Applying Arrays and Generics -
- 8 **Creating and Building Projects** - Constructing Solutions and Projects - Navigating the Solution Explorer - Examining Property Settings - Assembly

Name - Default Namespace - Target Framework - Output Type

- 9 **Building Projects** :Startup Object - Icon and Manifest - Compiling Applications - Rebuilding Solutions/Projects - Cleaning Solutions/Projects - Managing Dependencies, Compilation Settings - Navigating with Class View - Using the Class Designer - Class Designer Code Generation

BLOCK 4 : DEBUGGING WITH VISUAL STUDIO

- 10 **Debugging methods:** Breakpoints - Stepping Through Code – Inspecting Application State - Locals and Autos Windows - Watch Windows - The Immediate Window - The Call Stack Window - The Quick Watch Window - Watching Variables with Pin To Source - Working with IntelliTrace
- 11 **Working with Databases** - Server Explorer - Creating a Database - Adding Tables - Relating Tables with Foreign Keys - Adding Stored Procedures - Configuring Database Options
- BLOCK 5 : BUILDING PROGRAMS WITH VS 2010**
- 12 Building Desktop Applications with WPF - Starting a WPF Project - Understanding Layout - Grid Layout - StackPanel Layout - DockPanel Layout - WrapPanel Layout - Canvas Layout
- 13 **Using WPF Controls** - Managing Windows for Controls - Setting Properties - Handling Events - Coding Event Handlers - Working with Data in WPF - Data Source - Configuring a ComboBox
- 14 **Reading and Saving Data** - Using the DataGrid - Summary -Creating Web Applications with ASP.NET MVC - Designing Silverlight Applications - Deploying Web Services with WCF

Text Book:

1. Joe Mayo, Visual Studio 2010 - A Beginner’s Guide, Tata Mc Graw Hill Edition, 2010.

Reference Books:

1. Nick Randolph, David Gardner, Professional Visual Studio 2010, Wiley Publishing 2010.
2. Andrew Moore, Visual Studio 2010 All-in-One For Dummies, Weiley Publishing, 2010.

Course Code	Title of the Course
31324	VB .NET & RDBMS LAB

Course Objective:

To develop an understanding of Visual Basic .Net

To develop the skills necessary to create software solutions using VB with .Net

To learn how to analyze certain types of problems with a software solution in mind

Course Requirements:

- Basic knowledge of Visual Basic

Course Outcome:

- Able to understand and design the solution to a problem using VB. Net
- Understand and implement the features of .Net for providing programmed solutions to complex problems

Experiments based on Visual Programming with .NET Theory

Unit No.	Contents
	BLOCK 1 : SIMPLE APPLICATIONS
1	Simple Applications: Developing simple applications using VB.NET <ul style="list-style-type: none"> a. Finding factorial Value b. Money Conversion c. Quadratic Equatin d. Temperature Conversion e. Login control
2	Login form: Create and Validate Login Form, Program to design Class, Program to demonstrate Inheritance, Polymorphism and Interfaces.
	BLOCK 2 : CONTROLS
3	Controls: Advance Controls, Common Dialog Controls. <ul style="list-style-type: none"> 2. Adrotator Control 3. Calendar control <ul style="list-style-type: none"> a. Display messages in a calendar control b. Display vacation in a calendar control c. Selected day in a calendar control using style d. Difference between two calendar dates 4. Treeview control a) Treeview control and datalist b) Treeview operations 5. Validation controls
4	Active X Controls: Working with intrinsic controls and ActiveX controls
	BLOCK 3 : MDI AND DATA CONTROLS
5	MDI: Application with multiple forms
6	Data controls: Application using data controls

BLOCK 3 : DIALOGS AND MENU

- 7 **Dialogs:** Application with dialogs
- 8 **Common Dialogs:** Application using Common Dialogs
- 9 **Menus:** Application with Menus

BLOCK 4 : EVENTS AND DATABASE

- 10 **Events and Database:** Drag and Drop Events Database Management Creating

ActiveX Controls

- 11 **DataGridView:**ADO.NET Code to show records in DataGridView Control.
 - 1. Databinding using datalist control
 - 2. Datalist control templates
 - 3. Databinding using datagrid
 - 4. Datagrid control template
 - 5. Datagrid hyperlink
 - 6. Datagrid button column
 - 7. Datalist event
 - 8. Datagrid paging
- 12 **Database operations:**ADO.NET Code to perform Insert, Delete, Update and Select operations. Crystal Reports Web Application using ASP.NET that uses validation controls. Table creation, Renaming a Table, Copying another table, Dropping a Table Table Description: Describing Table Definitions, Modifying Tables, Joining tables, Number and Date functions.

BLOCK 5 : SQL QUERIES AND SUB QUERIES

- 13 **SQL Queries:** Queries, Sub Queries, and aggregate functions
DDL: Experiments using database DDL SQL statements
DML: Experiment using database DML SQL statements
DCL: Experiment using database DCL SQL statements
- 14 **APPLICATION DEVELOPMENT :** Design and Develop Application: Library information system, Students mark sheet processing, Telephone directory maintenance, Gas booking and delivering, Electricity bill processing, Bank Transaction, Pay roll processing. Personal information system, Question database and conducting Quiz and Personal diary

Reference Books:

- 1. Joe Mayo, Visual Studio 2010 - A Beginner's Guide, Tata Mc Graw Hill Edition, 2010.
- 2. Nick Randolph, David Gardner, Professional Visual Studio 2010, Wiley Publishing 2010.
- 3. Andrew Moore, Visual Studio 2010 All-in-One For Dummies, Weiley Publishing, 2010.

SECOND YEAR
SEMESTER III

Course Code	Title of the Course
31331	OPEN SOURCE SOFTWARE

Course Objectives:

- To understand the need, advantages and applications of open source software
- To work with open source database and open source programming languages

Course Outcome

- Attained to know and work with open source software like Linux, MySql etc
- Able to do programming in open source programming languages

Unit No. Contents

BLOCK 1 : INTRODUCTION

- 1 Introduction to Open sources – Need of Open Sources – Advantages of Open Sources–Application of Open Sources.
- 2 Open source operating systems: LINUX: Introduction– General Overview– Kernel Mode and user mode–Process–
- 3 Advanced Concepts–Scheduling – Personalities – Cloning – Signals – Development with Linux. .

BLOCK 2 : OPEN SOURCE DATABASE

- 4 MySQL: Introduction Setting up account Starting, terminating and writing your own SQL programs
- 5 Record selection Technology– Working with strings – Date and Time
- 6 Sorting Query Results – Generating Summary – Working with metadata – Using sequences – MySQL and Web.

BLOCK 3 :OPEN SOURCE PROGRAMMING LANGUAGE - PHP

- 7 PHP: Introduction – Programming in web environment – variables – constants–data types – operators –Statements
- 8 Functions– Arrays – OOP –String Manipulation and regular expression –File handling and data storage
- 9 PHP and SQL database – PHP and LDAP – PHP Connectivity –Sending and receiving E-mails –Debugging and error handling – Security – Templates.

BLOCK 4 :OPEN SOURCE PROGRAMMING LANGUAGE - PYTHON

- 10 Syntax and Style – Python Objects – Numbers – Sequences – Strings –Lists and Tuples – Dictionaries –Conditionals and Loops .
- 11 Files – Input and Output –Errors and Exceptions – Functions – Modules – Classes and OOP – Execution Environment.

BLOCK 5 :OPEN SOURCE PROGRAMMING LANGUAGE - PERL

- 12 Perl backgrounder – Perl overview– Perl parsing rules – Variables and Data – Statements
- 13 Control structures – Subroutines
- 14 Packages, and Modules-Working with Files –Data Manipulation.

Text Books:

1. Remy Card, Eric Dumas and Frank Mevel, “The Linux Kernel Book”, Wiley Publications, 2003

2. Steve Suchring, “MySQL Bible”, John Wiley, 2002

Books for Reference:

1. Rasmus Lerdorf and Levin Tatroe, “Programming PHP”, O’Reilly, 2002
2. Wesley J. Chun, “Core Python Programming”, Prentice Hall, 2001
3. Martin C. Brown, “Perl: The Complete Reference”, 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
4. Steven Holzner, “PHP: The Complete Reference”, 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
5. Vikram Vaswani, “MYSQL: The Complete Reference”, 2nd Edition, Tata McGraw- Hill Publishing Company Limited, Indian Reprint 2009.

Course Code	Title of the Course
31332	OPERATING SYSTEM

Course Objective

- Able to understand the operating system principles
- Able to know the Principles of Deadlock, processor scheduling and memory management.

Course Requirements:

- To be aware of the evolution and fundamental principles of operating system, processes and their communication

Course Outcome

- Students have acquired the knowledge about the types of operating systems
- Students have acquired the knowledge about the functions of operating system

Unit No. Contents

BLOCK 1 : INTRODUCTION

- 1 Introduction:** Definition of Operating Systems – Computer System Organization
- 2 Computer System Architecture** – Operating System Structure – Operating System Operations
- 3 System Structures:** Operating System Services – System Calls – System Programs – Operating System Design and Implementation.

BLOCK 2 : PROCESS CONCEPT

- 4 Process Concept:** Process Scheduling – Operations on Processes – Inter Process Communication
- 5 Process Scheduling:** Scheduling Concepts – Scheduling Criteria – Scheduling Algorithms – Multiple Processor Scheduling

BLOCK 3 : SYNCHRONIZATION

- 6 Synchronization:** The Critical Section Problem – Synchronization Hardware – Semaphores – Classic Problems of Synchronization – Monitors
- 7 Deadlocks:** Deadlocks Characterization – Methods for Handling Deadlocks
- 8 Deadlock Prevention** – Avoidance – Detection – Recovery from Deadlock.

BLOCK 4 : MEMORY MANAGEMENT

- 9 Memory Management Strategies:** Swapping – Contiguous Memory Allocation – Paging – Segmentation

BLOCK 5 : FILE SYSTEM

- 10 File Concept** – Access Methods – Directory
- 11 Structure** – File System Mounting – File Sharing – Protection.
- 12 Implementing File Systems:** File System Structure – File System Implementation
- 13 Directory Implementation** – Allocation Methods – Free Space Management
- 14 Secondary Storage Structure:** Overview of Mass Storage Structure – Disk Structure – Disk Attachment – Disk Scheduling – Disk Management.

TEXT BOOK:

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, “Operating System Principles”, 7th Edition, Wiley India Edition, 2008.

REFERENCE BOOKS:

1. Andrew S.Tanenbaum, Operating Systems Design and Implementation, 3rd edition, Prentice Hall, 2006.
2. Harvey M. Deitel, An Introduction to Operating Systems, 3rd Edition, Addison Wesley 2007.

Course Code	Title of the Course
31333	COMPUTER NETWORKS

Course Objectives:

- To understand networking concepts and basic communication model
- To understand network architectures and components required for data communication.

Course Requirements:

- Basic knowledge of networking

Course Outcome:

- Able to understand the working principles of various application protocols
- Acquire knowledge about security issues and services available

Unit No. Contents

BLOCK 1 : INTRODUCTION & PHYSICAL LAYER

1 Introduction; Computer Networks - Applications - Line configuration - Topology - Transmission Modes

2 Categories of Network: LAN, MAN, WAN - OSI Layer.

3 Physical Layer: Analog and Digital Signals Performance - Transmission Media

BLOCK 2 : DATA LINK LAYER

4 Data Link Layer: Error Detection and correction – Introduction – Block Coding – Cyclic Redundancy Check – Framing – Flow and error Control –

5 Data link layer protocols: stop - wait protocol and sliding window protocol - ARQ, Go-back-n ARQ, selective - repeat ARQ.

6 Multiple Access Protocols: ALOHA – CSMA – CSMA/CD – CSMA/CA.

BLOCK 3 : NETWORK LAYER

7 Introduction: Circuit switching - packet switching - message switching - Virtual circuit and Datagram subnets

8 Routing algorithm : Static routing -shortest path routing, Flooding, Flow based routing - Dynamic routing - distance vector routing, link state routing

9 Other Routing Algorithms: Hierarchical routing, Broad cast, Multi cast routing - Congestion, Control Algorithms

BLOCK 4 : TRANSPORT LAYER

10 Introduction: Process to process delivery – UDP – TCP - Connection oriented Vs connectionless services.

11 Applications and services: Domain name system - Remote Logon – Mail Exchange - File Transfer

12 Remote Procedure Call - Remote File Access – WWW and HTTP – SNMP.

BLOCK 5 : NETWORK SECURITY

13 Introduction: Cryptography – Encryption model – Transposition and Substitution Chipers – Cryptographic principles

14 Symmetric key cryptography: DES – AES – Asymmetric key cryptography: RSA – Security services.

Text Books:

1. Computer Networks, 3rd Edition, Andrew S Tanenbaum, Pearson Education, 2010.
2. Data Communications and Networking, 4th Edition, Behrouz A. Forouzan, TMH, 2009.

Reference Books:

1. Data and Computer Communications, 8th Edition, William Stallings, Prentice Hall.
2. An Engineering Approach to Computer Networks, 2nd Edition, S.Keshav, Pearson Education, 2008

Course Code	Title of the Course
31334	OPEN SOURCE LAB

Course Objectives:

- To understand the need, advantages and applications of open source software
- To work with open source database and open source programming languages
- To develop applications in PHP using various concepts like arrays, udf's, Sessions and make the students to understand and to establish the connectivity between PHP and MySQL and develop programs to add records, retrieve records and delete records from a table.

Course Outcome

- Attained to know and work with open source software like Linux, MySql etc.,
- Able to do programming in open source programming languages.

Unit No. Contents

BLOCK 1 : INTRODUCTION TO LINUX

- 1** **Kernel** configuration, compilation and installation.
- 2** **Install various software** on Linux. Install and configure XAMP., Unix commands
And shell programming

BLOCK 2 : MYSQL

- 3** **Creating simple table** with constraints
Insertion, Updation and Deletion of rows in MYSQL tables
Searching of data by different criteria, Sorting of data
- 4** **Demonstration of joining tables**
Usage of subqueries, aggregate functions
Working with set operators
Working with string, numeric and date functions
- 5** **Database connectivity** in PHP with MySQL
Validating Input
Formatting the Output.

BLOCK 3 : PHP

- 6** **PHP Simple Programs**
PHP program to perform the arithmetic operation.
PHP program Adding numbers using function.
- 7** **PHP Web programs arrays and functions**
Creating simple webpage using PHP
Use of conditional statements in PHP
Use of looping statements in PHP
Creating different types of arrays

	Usage of array functions
	Creating user defined functions
8	File manipulation using PHP
	Creation of files,sessions and cookies
	Creating simple applications using PHP
	Creating simple table with constraints
	BLOCK 4 : PERL AND PYTHON PROGRAMMING
9	PERL programs : Simple programs using PERL
10	Python Programming: Use of conditional statements
	Use of looping statements
11	Python Programming: Arrays Creating different types of arrays
	Usage of array functions
	Creating user defined functions
12	Python Programming: String: String Handling
	BLOCK 5 : APPLICATION DEVELOPMENT
13	Connect to a MYSQL database with PHO, PERL and Python.
14	Developing simple applications using PHP and MYSQL

Books for Reference:

- Remy Card, Eric Dumas and Frank Mevel, “The Linux Kernel Book”, Wiley Publications, 2003
- Steve Suchring, “MySQL Bible”, John Wiley, 2002.
- Rasmus Lerdorf and Levin Tatroe, “Programming PHP”, O’Reilly, 2002.
- Wesley J. Chun, “Core Python Programming”, Prentice Hall, 2001
- Martin C. Brown, “Perl: The Complete Reference”, 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
- Steven Holzner, “PHP: The Complete Reference”, 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
- Vikram Vaswani, “MYSQL: The Complete Reference”, 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009

SEMESTER IV

Course Code	Title of the Course
31341	WEB TECHNOLOGY

Course Objective:

To understand and practice markup languages
To understand and practice embedded dynamic scripting on client side Internet Programming
To understand and practice web development techniques on client-side

Course Requirement:

Basic concepts of Web and Java programming

Course Outcome:

Explore markup languages features and create interactive web pages using them
Learn and design Client side validation using scripting languages
Acquire knowledge about Open source JavaScript libraries
Able to design front end web page and connect to the back end databases.

Unit No.

Contents

BLOCK 1 : HTML, JAVA SCRIPT and XML

- 1 HTML Common tags:** List, Tables, images, forms, Frames; Cascading Style sheets.
- 2 Introduction to Java Scripts,** Objects in Java Script, Dynamic HTML with Java Script.
- 3 XML:** Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

BLOCK 2 : JAVA BEANS

- 4 Java Beans:** Introduction to Java Beans, Advantages of Java Beans, JDK, Introspection, Using Bound properties, Bean Info Interface,
- 5 Constrained properties,** Persistence, Customizes, Java Beans API, Introduction to EJB's

BLOCK 3 : SERVLETS

- 6 Web Servers and Servlets:** Tomcat web server, Introduction to Servlets: Lifecycle of a Servlet, JSDK
- 7 The Servlet API,** The javax.servlet Package, Reading Servlet parameters, Reading Initialization parameters.
- 8 The javax.servlet HTTP package,** Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues.

BLOCK 4 : JAVA SERVER PAGES (JSP)

- 9 Introduction to JSP:** The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment: Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat.
- 10 JSP Application Development:** Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods

- 11 **Error Handling and Debugging:** Sharing Data Between JSP pages, Requests, and Users Passing Control and Data between Pages – Sharing Session and Application Data – Memory Usage Considerations

BLOCK 5 : DATABASE ACCESS AND STRUTS FRAMEWORK

- 12 **Database Access:** Database Programming using JDBC, Studying Javax.sql.* package, Accessing a Database from a JSP Page
- 13 **Application – Specific Database Actions,** Deploying JAVA Beans in a JSP Page
- 14 **Introduction to struts framework.**

TEXT BOOK:

1. Chris Bates, Web Programming, Building Internet Applications, 2nd Edition, Dreamtech
2. Patrick Naughton and Herbert Schildt, The complete Reference Java 2, 5th Edition, Tata McGraw Hill.
3. Jason Hunter Java Servlet Programming, O'Reilly
4. Hans Bergsten, Java Server Pages, O'Reilly

REFERENCE BOOK:

1. Ramesh Bangia, Web Technology, Firewall media, 2006.

Course Code	Title of the Course
31342	SOFTWARE ENGINEERING

Course Objective:

- To know of how to do project planning for the software process.
- To learn the cost estimation techniques during the analysis of the project.
- To understand the quality concepts for ensuring the functionality of the software

Course Requirement:

- Fundamental concepts of Software Engineering

Course Outcome:

- Understand the activities during the project scheduling of any software application.
- Learn the risk management activities and the resource allocation for the projects.
- Able to create reliable, replicable cost estimation that links to the requirements of project planning and managing.

Unit No. Contents

BLOCK 1 : INTRODUCTION

- 1 **Software:** Role of software, Software myths. Generic view of process: A layered technology, a process framework, The Capability Maturity Model Integration (CMMI)
- 2 **Process patterns,** Process assessment, Personal and Team process models.
- 3 **Process model:** The waterfall model, Incremental process models, Evolutionary process models, The Unified process.

BLOCK 2 : REQUIREMENT ENGINEERING:

- 4 Design and Construction, Requirement Engineering Tasks, Requirements Engineering Process, Validating Requirements.
- 5 **Building the Analysis Model:** Requirement analysis, Data Modeling concepts, Object-Oriented Analysis

- 6 **Modeling:** Scenario-Based Modeling, Flow-Oriented Modeling Class-Based Modeling, Creating a Behavioral Model.

BLOCK 3 : DESIGN

- 7 **Design Engineering:** Design process and quality, Design concepts, the design model.
- 8 **Architectural Design:** Software architecture, Data design, Architectural styles and patterns, Architectural Design.
- 9 **User interface design:** The Golden rules, User interface analysis and design, Interface analysis, Interface design steps, Design evaluation.

BLOCK 4 : TESTING

- 10 **Testing Strategies:** Approach to Software Testing, Unit Testing, Integration Testing, Test strategies for Object-Oriented Software, Validation Testing, System Testing, the art of Debugging, Black-Box and White-Box testing.

- 11 **Product Metrics:** Software Quality, Product Metrics, Metrics for Analysis Model, Design Model, Source code and Metrics for testing, Metrics for maintenance. Metrics for Process and Projects Domains: Software Measurement, Metrics for Software Quality and Software Process.
- BLOCK 5 : RISK and QUALITY MANAGEMENT**
- 12 Risk Strategies: Reactive vs. Proactive Risk strategies, software risks, Risk identification
- 13 **Risk Protection and refinement:** Risk projection, Risk refinement, Risk Mitigation, Monitoring and Management, RMMM Plan.
- 14 **Quality Management:** Quality concepts, Software quality assurance, Software Reviews, Formal Technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

TEXT BOOK:

- 1. Roger S. Pressman Software Engineering - A practitioner's Approach McGraw-Hill 6th Edition (2010)

REFERENCE BOOKS:

- 1. Richard Fairlay Software Engineering Concepts McGraw Hill Book Company (2005)
- 2. Pankaj Jalote An Integrated Approach to Software Engineering Narosa Publishing House 3rd Edition (2005)
- 3. Software Engineering, Somzerville, 8th Edition, Pearson Education 2007.
- 4. Software Engineering K.K. Agarwal & Yogesh Singh, 3rd Edition New Age International Publishers 2007.
- 5. Software Engineering an Engineering Approach James F. Peters, Witold Pedrycz - John Wiley & Sons 2000.
- 6. Software Engineering Principles and Practice Waman S Jawadekar, , Tata McGraw-Hill 2004.

Course Code	Title of the Course
31343	CLOUD COMPUTING

Course Objective:

Lets learner to understand how to access all applications and documents from everywhere in the world, freeing from the confines of the desktop and making it easier for group members in different locations to collaborate.

Course Requirements:

Basic knowledge about internet and its application.

Course Outcome:

Understood the importance of cloud computing and its services.

Unit No.	Contents
	BLOCK 1 : INTRODUCTION
1	Fundamentals :Cloud Computing – History – Working of cloud computing – Cloud computing today – Pros and cons of Cloud Computing – Benefits of cloud computing
2	Non users of Cloud computing – Developing cloud services – Pros and Cons of Cloud service Development
3	Types of Cloud Service Development – Discovering Cloud Services development services and tools.
	BLOCK 2 : CLOUD COMPUTING FOR EVERYONE
4	Centralizing Email Communications – Collaborating of Grocery lists – Collaborating on To-Do lists –
5	Collaborating on Household budgets – Collaborating on Contact lists – Communicating across the community – Collaborating on Schedules
6	Collaborating on group projects and events – Cloud computing for corporation.
	BLOCK 3 : CLOUD SERVICES
7	Exploring online calendar applications – Exploring online scheduling applications – Exploring online planning and task management – Collaboration on event management –
8	Collaboration on Contact Management – Collaboration on Project Management –
9	Collaborating on Word Processing and Databases – Storing and Sharing files and other online content.
	BLOCK 4 : ISSUES IN CLOUD
10	Federation in cloud – Four levels of federation – Privacy in cloud
11	Security in Cloud –Software as a security service – Case Study: Aneka – service

- level agreements
- 12** **Cloud Storage:** Over view of cloud storage – Cloud storage providers – Amazon S3 – Cloud file system – Map Reduce – Hadoop
- 13** **BLOCK 5 : CLOUD DEPLOYMENT TOOLS:**
- 14** Study of open source cloud platforms – Eucalyptus
- Nimbus – Open Nebula

Text Books:

1. Michael Miller, “Cloud computing – Web based applications that change the way you work and collaborate online”, Pearson Education Inc., 2008
2. John W.Rittinghous, James F.Ransome, “Cloud Computing: Implementation, Management and Security”, CRC Press 2010.

Books for Reference:

1. Danielle Ruest and Nelson Ruest, “Virtualization: A Beginners’s Guide”, McGraw Hill,2009.
2. Tom White, “Hadoop: The Definitive Guide”, O’RIELLY Media 2009.
3. Rajkumar Buyya, James Broberg, Andrezj Goscinski, “Cloud computing – Principles and Paradigms”, John Wiley and Sons, 2011.

Course Code	Title of the Course
31344	WEB TECHNOLOGY LAB

Course Objective:

- To understand and practice markup languages
- To understand and practice embedded dynamic scripting on client side Internet Programming
- To understand and practice web development techniques on client-side

Course Requirement:

- Basic concepts of Web and Java programming

Course Outcome:

- Explore markup languages features and create interactive web pages using them
- Learn and design Client side validation using scripting languages
- Acquire knowledge about Open source JavaScript libraries
- Able to design front end web page and connect to the back end databases.

Experiments based on Web Technology Theory

Unit No. Contents

BLOCK 1 : HTML and JAVASCRIPT

- 1 **HTML Common tags:** List, Tables, images, forms, Frames; Cascading Style sheets.
- 2 **Introduction to Java Scripts,** Objects in Java Script, Dynamic HTML with Java Script.
- 3 **DHTML programs**

BLOCK 2: XML and JAVA BEANS

- 4 **XML:** Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX
- 5 **Simple programs using XML**
- 6 **Simple applications using Java Beans :** setting and getting properties of beans

BLOCK 3 : JAVA SERVLETS PROGRAMMING

- 7 **Simple Server side programs:** Example. Write Servlet program to send Email message.
- 8 **Session Handling**
- 9 **Cookies :** getting and setting cookies

BLOCK 4 : JAVA SERVER PAGES

- 10 Write a JSP program using JDBC. Shopping cart problem
- 11 Develop an Application for JSP – Servlet communication
- 12 Deploying JAVA Beans in a JSP Page

BLOCK 5 : DATABASE ACCESS

- 13 Database Programming using JDBC

- 14** Accessing a Database from a JSP Page , Simple database applications with create, insert, modify and delete records. Batch Update. Stored Procedure and callable statement.

REFERENCE BOOK:

1. Chris Bates, Web Programming, Building Internet Applications, 2nd Edition, Dreamtech
2. Patrick Naughton and Herbert Schildt, The complete Reference Java 2, 5th Edition, Tata McGraw Hill.
3. Jason Hunter Java Servlet Programming, O'Reilly
4. Hans Bergsten, Java Server Pages, O'Reilly .
5. Ramesh Bangia, Web Technology, Firewall media, 2006

M.C.A

S.No	Course Code		Title of the Course	CIA Marks Max	ESE Marks Max	TOT Marks Max	C Max.
	M.C.A	M.C.A (LE)					
FIRST YEAR							
I Semester							
1	31511		Digital Computer Organization	25	75	100	4
2	31512		Object Oriented Programming and C++	25	75	100	4
3	31513		Data Structure and Algorithms	25	75	100	4
4	31514		Data Structure using C++ Lab	25	75	100	4
			Total	100	300	400	16
II Semester							
5	31521		Software Engineering	25	75	100	4
6	31522		Relational Database Management Systems(RDBMS)	25	75	100	4
7	31523		Computer Graphics	25	75	100	4
8	31524		RDBMS Lab	25	75	100	4
			Total	100	300	400	16
SECOND YEAR							
III Semester							
9	31531	34031	Discrete Mathematics	25	75	100	4
10	31532	34032	Operating System	25	75	100	4
11	31533	34033	Object Oriented Analysis and Design	25	75	100	4
12	31534	34034	Operating System Lab	25	75	100	4
			Total	100	300	400	16
IV Semester							
13	31541	34041	Accounting and Financial Management	25	75	100	4
14	31542	34042	Communication Skills	25	75	100	4
15	31543	34043	Internet and Java Programming	25	75	100	4
16	31544	34044	Internet and Java Programming Lab	25	75	100	4
			Total	100	300	400	16
THIRD YEAR							
V Semester							
17	31551	34051	Computer Networks	25	75	100	4
18	31552	34052	Data Mining and Warehousing	25	75	100	4
19	31553	34053	Visual Programming with •NET	25	75	100	4
20	31554	34054	VB•NET Lab	25	75	100	4
			Total	100	300	400	16
VI Semester							
21	31561	34061	Cloud Computing	25	75	100	4
22	31562	34062	Soft Computing	25	75	100	4
23	31563	34063	Big Data Analytics	25	75	100	4
24	31564	34064	Mini Project	25	75	100	4
Total				100	300	400	16
Grand Total				600	1800	2400	96

**Detailed Syllabi FIRST YEAR
SEMESTER I**

Course Code	Title of the Course
31511	DIGITAL COMPUTER ORGANIZATION

Course Objectives:

To impart the knowledge in the field of digital electronics
To impart knowledge about the various components of a computer and its internals.

Course Requirements:

- Before studying this course, the student has knowledge about
- Basic principles of number system
- Concepts of digital, Boolean and instruction

Course Outcome:

After the completion of this course, the student will be able to :

- Design and realize the functionality of the computer hardware with basic gates and other components using combinational and sequential logic.
- Understand the importance of the hardware-software interface

Unit No Description

BLOCK 1 :NUMBER SYSTEMS

- | | |
|----------|--|
| 1 | Number Systems : Binary, Octal, Decimal and Hexadecimal number systems – Conversion from one base to another base – Use of complements – binary arithmetic – Numeric and Character codes. |
| 2 | Boolean algebra and Combinational Circuits: Fundamental concepts of Boolean Algebra – De Morgan’s theorems |
| 3 | Simplification of expressions – Sum of products and products of sums – Karnaugh map simplification – Quine - McKluskey method – two level implementation of Combinational Circuits. |

BLOCK 2 COMBINATIONAL CIRCUITS AND SEQUENTIAL CIRCUITS

- | | |
|----------|--|
| 4 | Combinational Circuits: Half Adder – Full Adder – Subtractors – Decoders – Encoders – Multiplexers – Demultiplexer. |
| 5 | Sequential Circuits: Flip flops – Registers – Shift Registers – Binary Counters – |

BCD Counters – Memory Unit.

- 6 **Data Representation** : Data Types – Complements – Fixed Point Representations – Floating Point Representations – Other Binary Codes – Error detection codes.

BLOCK 3 : BASIC COMPUTER ORGANIZATION AND DESIGN

- 7 **Instruction Codes** : Instruction Codes – Computer Registers – Computer Instructions – Timing and Control
- 8 **Instruction cycle**: – Memory reference instructions – Input output and Interrupt – Complete Computer Description – Design on Basic Computer – Design of Accumulator logic

BLOCK : 4 CENTRAL PROCESSING UNIT

- 9 Introduction – General Register organization – Stack organization
- 10 **Instruction formats**: – Addressing modes – Data transfer and manipulation – Program control.
- 11 **Input – output organization**: Peripheral devices – Input output interface – Asynchronous data transfer – Modes of transfer
- 12 **Priority interrupt**: – DMA – IOP – Serial Communication.

BLOCK : 5 MEMORY ORGANIZATION

- 13 Memory Hierarchy – Main memory – Auxiliary memory – Associative memory
- 14 **Memory organization**: Cache memory – Virtual memory – Memory management hardware.

Text Books:

1. Digital Computer Fundamentals, 6th Edition, Thomas C. Bartee, Tata McGraw Hill, 2008.
2. Digital Logic and Computer Design, M. Morris Mano, Pearson Education, 2008.

Reference Books:

1. Digital Computer Electronics, 3rd Edition, Albert Paul Malvino and Jerald A. Brown, Tata McGraw Hill, 2008.
2. Computer Organization, 5th Edition, V.C. Hamacher et al, Tata McGraw Hill.

Course Code	Title of the Course
31512	OBJECT ORIENTED PROGRAMMING and C++

Course Objectives:

- To provide an overview of working principles of object oriented paradigm
- To understand and apply the OOPs fundamentals
- To implement the features of OOP in real world applications

Course Outcome:

- Able to understand the object oriented programming techniques

Unit Contents

Unit No.	Contents
	BLOCK 1: INTRODUCTION
1	Introduction and Features: Evolution of Object Oriented Language, Object oriented Paradigm, Basic concept of object-oriented programming- objects, classes, encapsulation and data abstraction, inheritance, polymorphism, dynamic binding, message passing
2	Popular OOP languages. Moving from C to C++ Introduction – Predefined console streams, hierarchy of console stream classes,
3	I/O operations; Unformatted I/O operations, formatted console I/O operations, manipulators, custom/user-defined manipulators.
	BLOCK 2 : CLASSES AND OBJECTS
4	Classes and Objects: Introduction, class specification, class objects, accessing class members, defining member functions, accessing member functions within a class, outside member functions as inline, private member function,
5	Memory allocation for objects: array of objects, function prototype, call by reference, return by reference, objects as function arguments, inline function, friend function, constant parameter and member function.
6	Object Initialization: Introduction - constructors, default constructor, parameterized constructors, multiple constructors in a class, dynamic initialization through constructors, copy constructor, dynamic constructor, destructor. Dynamic Objects: Introduction, pointers to objects, array of pointers to objects, this pointer.
	BLOCK 3 : INHERITANCE, POLYMORPHISM AND DATA CONVERSION
7	Inheritance: Introduction, derived class declaration, forms of inheritance, inheritance and member accessibility, multilevel inheritance, multiple inheritance, hierarchical inheritance, hybrid inheritance.
8	Polymorphism: Introduction, Function overloading, Operator overloading introduction, unary operator overloading, binary operator overloading, assignment operator overloading, overloading with friend functions.
9	Data conversion: conversion between basic data types, conversion between objects and basic types, conversion between objects of different classes. Virtual function: Introduction, need for virtual functions, pure virtual functions, abstract classes.

BLOCK 4 : TEMPLATES AND FILES

- 1 Generic Programming with Templates:** Introduction - class templates – class template with multiple arguments
- 1 Function template:** function template with multiple arguments. inheritance of class template.
- 12 Streams with Files :** Introduction, hierarchy of file stream classes, opening and closing of files, file pointers and their manipulators, sequential access to a file, file input/output with stream class, random access to a file.

BLOCK 5 : EXCEPTION HANDLING

- 13 Exception Handling:** Introduction – Basics of exception handling, exception handling mechanism, throwing mechanism, catching mechanism. Exceptions in constructors and destructors
- 14 Other Exception Handling methods:** Handling uncaught exceptions, exceptions in operator overloaded functions, exception in inheritance tree, exceptions in class templates, memory allocation failure exception.

TEXT BOOK:

- 1. E.Balagurusamy, Object oriented programming in C++, Third Edition, Tata McGraw Hill Publications, 2007.
- 2. Mastering C++, K.R Venugopal and Rajkumar, T.Ravishankar, Tata McGraw Hill Publishing Company Ltd., 2006.

REFERENCE BOOK:

- 1. Object Oriented Programming in C++, Fourth Edition, Rober Lafore, Galgotia Publications Pvt. Ltd., New Delhi. 2010.

Course Code	Title of the Course
31513	DATA STRUCTURE AND ALGORITHMS

Course Objectives:

- The learner should be well versed with the fundamentals of Algorithms, learn various data structures, should be able to use them appropriately as per need during development of programs.
- Also, the learner should know different sorting and searching techniques so that correct techniques can be used in different programs so that the complexity of the program does not increase due the sorting/ search technique employed.

Course Outcome

After the completion of this course, the student will able to

- To write programs using structures, strings, arrays, pointers and strings for solving complex computational problem.
- Using the data structures real time applications
- Able to analyze the efficiency of Data Structures

Unit No	Contents
	BLOCK 1 : INTRODUCTION
1	Introduction to Data Structure : Types of Data Structure , Primitive data types Algorithms: –Time and space Complexity of algorithms
2	Arrays: Array initialization, Definition of Array, Characteristic of Array ,One-dimensional Array, Two-dimensional array and Multi dimensional array
	BLOCK 2 : LINEAR DATA STRUCTURE
3	Stack : Stack related terms, Operations on a stack,
4	Representation of Stack: Implementation of a stack – application of Stack. Expression Evaluation Polish notation.
5	Queues: Operations on queue Circular Queue, Representation of Queues, Application of Queues
6	List: Merging lists, Linked list, Single linked list, Double Linked List, Header Linked list
7	Operation on Linked List : Insertion and Deletion of linked list
8	Traversal: Traversing a linked list , Representation of linked list.
	BLOCK : 3 NON-LINEAR DATA STRUCTURE
9	Trees: Binary Trees, Types of Binary trees, Binary Tree Representation
10	Binary Tree operations / Applications : Traversing Binary Trees, Binary Search tree,
11	Operations on Binary Tree: Insertion and Deletion operations, Hashing Techniques.
	BLOCK 4 : SEARCHING TECHNIQUES
12	Searching : Introduction, Searching, Linear Search, Binary Search
	BLOCK 5 : SORTING TECHNIQUES
13	Sorting: Bubble sort, Insertion sort, Radix sort

Text Books:

1. Fundamentals of Data structures , Second edition, Ellis Horowitz and Sartaj Sahini, Universities press, 2007.
2. Data Structures, Seymour Lipschutz, G.A.Vijayalakshmi Pai, Second Edition , Schaum's Outlines, Tata Mc-Graw Hill Private Ltd., 2006.

Reference Books:

1. Programming and Data Structure, Pearson Edition, Ashok N Kamthane, 2007.

Course Code	Title of the Course
31514	DATA STRUCTURE USING C++ - LAB

Course Objectives

- To be able to solve data structure problems using C++ language
- To learn and implement C++ language programming techniques
- To introduce the efficiency of the algorithm

Course Outcome

- Students can develop programming knowledge/
- Students can solve any kind of problems using C++ language
- Data Structure based problems can be solved

Experiments based on c++ programming and Data Structures

Unit **Contents**
No.

BLOCK 1 : SIMPLE C++ PROGRAMS

- 1** **Introduction** Simple C++ Programs
2 **Control Structures:** Using if and switch constructs Programs
3 **Looping , Arrays ,Structure statements:** for, while, do-while, Strings and Matrices Programs Problems

BLOCK 2 : OOPs CONCEPTS

- 4** **Functions:** static function, friend function ,constructor , destructor and operator overloading and Recursive programs
5 **Inheritance and polymorphism:** Inheritance types and polymorphism types, Virtual function
6 **File:** File Handling C++ Programs, opening and closing a data file - creating a data file, processing a data file.
7 **Pointers :** Pointers and Pointers with Arrays Programs

BLOCK 3: LINEAR DATA STRUCTURE

- 8** **Stacks :** Stack Implementation, expression evaluation, Polish notation
9 **Queues:** Queue Implementation, Applications of Queue
10 **Linked List programs:** List, Merging lists, Linked list, Single linked list, Double Linked List, Header Linked list, Insertion and Deletion of linked list, Traversing a linked list.

BLOCK 4 : NON LINEAR DATA STRUCTURE

- 11** **Tree Programs :** Trees, Binary Trees, Types of Binary trees, Binary Tree Representation, Traversing Binary Trees, Binary Search tree, Insertion and Deletion operations,

12 **Graphs:**

Shortest Path Algorithms

- Dijkstra's Algorithm
- Graphs with Negative Edge costs
- Acyclic Graphs
- All Pairs Shortest Paths Algorithm

Minimum cost Spanning Trees

- Kruskal's Algorithm
- Prims's Algorithm
- Applications

□ Breadth First Search

BLOCK 5 : SEARCHING AND SORTING ALGORITHMS

13 Searching Techniques: Linear and Binary search Programs

14 Sorting techniques: Bubble sort, Quick sort, Insertion sort, Merge sort

Reference Books:

1. Data Structures, Seymour Lipschutz, G.A.Vijayalakshmi Pai, Second Edition , Schaum's Outlines, Tata Mc-Graw Hill Private Ltd., 2006.
2. Fundamentals of Data structures in C, Second edition, Ellis Horowitz and Sartaj Sahini, Universities press, 2007.
3. Programming and Data Structure, Pearson Edition, Ashok N Kamthane, 2007.

SEMESTER II

Course Code	Title of the Course
31521	SOFTWARE ENGINEERING

Course Objective:

- To know of how to do project planning for the software process.
- To learn the cost estimation techniques during the analysis of the project.
- To understand the quality concepts for ensuring the functionality of the software

Course Requirement:

- Fundamental concepts of Software Engineering

Course Outcome:

- Understand the activities during the project scheduling of any software application.
- Learn the risk management activities and the resource allocation for the projects.
- Able to create reliable, replicable cost estimation that links to the requirements of project planning and managing.

Unit No. Contents

BLOCK 1 : INTRODUCTION

- 1 **Software:** Role of software, Software myths. Generic view of process: A layered technology, a process framework, The Capability Maturity Model Integration (CMMI)
- 2 **Process patterns,** Process assessment, Personal and Team process models.
- 3 **Process model:** The waterfall model, Incremental process models, Evolutionary process models, The Unified process.

BLOCK 2 : REQUIREMENT ENGINEERING:

- 4 Design and Construction, Requirement Engineering Tasks, Requirements Engineering Process, Validating Requirements.
- 5 **Building the Analysis Model:** Requirement analysis, Data Modeling concepts, Object-Oriented Analysis
- 6 **Modeling:** Scenario-Based Modeling, Flow-Oriented Modeling Class-Based Modeling, Creating a Behavioral Model.

BLOCK 3 : SYSTEM DESIGN

- 7 **Design Engineering:** Design process and quality, Design concepts, the design model.
- 8 **Architectural Design:** Software architecture, Data design, Architectural styles and patterns, Architectural Design.
- 9 **User interface design:** The Golden rules, User interface analysis and design, Interface analysis, Interface design steps, Design evaluation.

BLOCK 4 : SYSTEM TESTING

- 10 **Testing Strategies:** Approach to Software Testing, Unit Testing, Integration Testing, Test strategies for Object-Oriented Software, Validation Testing, System Testing, the art of Debugging, Black-Box and White-Box testing.

- 11 **Product Metrics:** Software Quality, Product Metrics, Metrics for Analysis Model, Design Model, Source code and Metrics for testing, Metrics for maintenance. Metrics for Process and Projects Domains: Software Measurement, Metrics for Software Quality and Software Process.
- BLOCK 5 : RISK and QUALITY MANAGEMENT**
- 12 Risk Strategies: Reactive vs. Proactive Risk strategies, software risks, Risk identification
- 13 **Risk Protection and refinement:** Risk projection, Risk refinement, Risk Mitigation, Monitoring and Management, RMMM Plan.
- 14 **Quality Management:** Quality concepts, Software quality assurance, Software Reviews, Formal Technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

TEXT BOOK:

- 1. Roger S. Pressman Software Engineering - A practitioner's Approach McGraw-Hill 6th Edition (2010)

REFERENCE BOOKS:

- 1. Richard Fairlay Software Engineering Concepts McGraw Hill Book Company (2005)
- 2. Pankaj Jalote An Integrated Approach to Software Engineering Narosa Publishing House 3rd Edition (2005)
- 3. Software Engineering, Somzerville, 8th Edition, Pearson Education 2007.
- 4. Software Engineering K.K. Agarwal & Yogesh Singh, 3rd Edition New Age International Publishers 2007.
- 5. Software Engineering an Engineering Approach James F. Peters, Witold Pedrycz - John Wiley & Sons 2000.
- 6. Software Engineering Principles and Practice Waman S Jawadekar, , Tata McGraw-Hill 2004.

Course Code	Title of the Course
31522	RELATIONAL DATABASE MANAGEMENT SYSTEMS (RDBMS)

Course Objectives:

- To understand the fundamentals of data models
- To make a study of SQL and relational database design.
- To know about data storage techniques and query processing.
- To impart knowledge in transaction processing, concurrency control techniques and External storage

Course Requirements:

- Knowledge about the basic concepts of the database.

Course Outcome:

- Design a database using ER diagrams and map ER into Relations and normalize the relations
- Acquire the knowledge of query evaluation to monitor the performance of the DBMS.
- Develop a simple database applications using normalization.

Unit No Contents

BLOCK 1 INTRODUCTION

- | | |
|-----------------------------------|--|
| 1 | Data base System Applications , data base System VS file System – View of Data – Data Abstraction – Instances and Schemas – data Models – the ER Model |
| 2 | Model :Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor. |
| 3 | History of Data base Systems - Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model – Conceptual Design for Large enterprises. |
| BLOCK 2 : RELATIONAL MODEL | |
| 4 | Introduction – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying / altering Tables and Views. |
| 5 | Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – |
| 6 | Relational calculus – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus. |
| BLOCK 3 : SQL QUERY | |
| 7 | Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases. Schema refinement |

- 8 **Normal forms** :Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF–
- 9 **Join**: Lossless join Decomposition – Dependency preserving Decomposition – Schema refinement in Data base Design – Multi valued Dependencies – FORTH Normal Form.
- BLOCK 4 TRANSACTION**
- 10 **Introduction** :Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation – Testing for serializability
- 11 **Protocols** : Lock Based Protocols – Timestamp Based Protocols- Validation- Based Protocols – Multiple Granularity.
- 12 **Recovery and Atomicity** – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage- Advance Recovery systems- Remote Backup systems
- BLOCK 5 STORAGE**
- 13 **Data on External Storage** – File Organization and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data Structures – Hash Based Indexing – Tree base Indexing – Comparison of File Organizations – Indexes and
- 14 **Performance Tuning-** Intuitions for tree Indexes – Indexed Sequential Access Methods (ISAM) – B+ Trees: A Dynamic Index Structure.

Text Books:

1. Raghurama Krishnan, Johannes Gehrke, Data base Management Systems, 3rd Edition, TATA McGrawHill.2003.
2. Silberschatz, Korth, Data base System Concepts, 6th Edition, Tata McGraw Hill, 2011.

Reference Books:

1. Relational Database Principles 2nd Edition, Colin Ritchie, 2004
2. Sharad Maheswari and Ruchin Jain, Database management systems Complete Practical Approach, Firewall media, 2006
3. Peter Rob & Carlos Coronel, Data base Systems design, Implementation, and Management, 7th Edition.
4. Elmasri Navrate , Fundamentals of Database Systems, Pearson Education.

Course Code	Title of the Course
31523	COMPUTER GRAPHICS

Course Objectives:

- To understand computational development of graphics
- To provide in-depth knowledge of display systems, image synthesis, shape modeling of 3D application.

Course Outcome:

- Enhance the perspective of modern computer system with modeling, analysis and interpretation of 2D and 3D visual information.
- Able to develop interactive animations.

Unit No.	Contents
	BLOCK 1 : INTRODUCTION
1	Introduction Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices.
2	Output primitives: Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms.
3	Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms.
	BLOCK 2 : 2 D TRANSFORM AND CLIPPING
4	2-D geometrical transform: Translation, scaling, rotation, reflection and shear transformations
5	2D Matrix representations: homogeneous coordinates, composite transforms, transformations between coordinate systems.
6	2-D viewing: The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions,
7	Clipping Algorithms: Cohen-Sutherland and Cyrus-beck line clipping

	algorithms, Sutherland –Hodgeman polygon clipping algorithm.
	BLOCK 3 : 3D OBJECT REPRESENTATION
8	Introduction: Polygon surfaces, quadric surfaces, spline representation,
9	Curve and surfaces: Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon rendering methods.
	BLOCK 4 : 3D GEMETRIC TRANSFORMATION
10	3-D Geometric transformations: Translation, rotation, scaling, reflection and shear transformations, composite transformations.
11	3-D viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping.
	BLOCK 5 : VISIBLE SURFACE DETECTION METHODS AND ANIMATION

12	Classification , back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods.
13	Computer animation: Design of animation sequence, general computer animation functions, raster animation,
14	Other Animation Techniques: Computer animation languages, key frame systems, motion specifications.

Text Books

1. Donald Hearn and M.Pauline Baker, Computer Graphics C version, Pearson Education, 2007.

Reference Books:

1. M. Newman and F. Sproull, Interactive Computer Graphics, McGraw Hill 2004
2. Foley, VanDam, Feiner and Hughes, Computer Graphics Principles and Practice, 2nd Edition in C, Pearson Education, 2004.
3. Plastok and Gordon Kalley, Computer, McGraw Hill 2000.

Course Code	Title of the Course
31524	RELATIONAL DATABASE MANAGEMENT SYSTEMS (RDBMS) LAB

Course Objectives:

- To understand the fundamentals of data models
- To make a study of SQL and relational database design.
- To know about data storage techniques and query processing.
- To impart knowledge in transaction processing, concurrency control techniques and External storage

Course Requirements:

- Knowledge about the basic concepts of the database.

Course Outcome:

- Design a database using ER diagrams and map ER into Relations and normalize the relations
- Acquire the knowledge of query evaluation to monitor the performance of the DBMS.
- Develop a simple database applications using normalization.

Use the concepts like data normalization, link between table by means of foreign keys and other relevant database concepts for the following applications. The implementation of each should have necessary input screen (forms) Menu-driven query processing and reports. Necessary validations should be made for each table;

Unit No.	Contents
	BLOCK 1 : TABLE MANIPULATION
1	Table creation , Renaming a Table, Copying another table, Dropping a Table
2	Table Description: Describing Table Definitions, Modifying Tables, Joining tables, Number and Date functions.
	BLOCK 2 : SQL QUERIES AND SUB QUERIES
3	SQL Queries: Queries, Sub Queries, and aggregate functions
4	DDL: Experiments using database DDL SQL statements
5	DML: Experiment using database DML SQL statements
6	DCL: Experiment using database DCL SQL statements
	BLOCK 3 : INDEX AND VIEW
7	Index : Experiment using database index creation, Renaming a index, Copying another index, Dropping a index
8	Views: Create Views, Partition and locks
	BLOCK 4 : EXCEPTION HANDLING AND PL/SQL
9	Exception Handling: PL/SQL Procedure for application using exception handling
10	Cursor: PL/SQL Procedure for application using cursors
11	Trigger: PL/SQL Procedure for application using triggers
12	Package: PL/SQL Procedure for application using package
13	Reports: DBMS programs to prepare report using functions
	BLOCK 5 : APPLICATION DEVELOPMENT

14	Design and Develop Application: Library information system, Students mark sheet processing, Telephone directory maintenance, Gas booking and delivering, Electricity bill processing, Bank Transaction, Pay roll processing. Personal information system, Question database and conducting Quiz and Personal diary
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Reference Books:

1. Raghurama Krishnan, Johannes Gehrke, Data base Management Systems, 3rd Edition, TATA McGrawHill.2003.
2. Silberschatz, Korth, Data base System Concepts, 6th Edition, Tata McGraw Hill, 2011.
3. Relational Database Principles 2nd Edition, Colin Ritchie, 2004
4. Sharad Maheswari and Ruchin Jain, Database management systems Complete Practical Approach, Firewall media, 2006
5. Peter Rob & Carlos Coronel, Data base Systems design, Implementation, and Management, 7th Edition.
6. Elmasri Navrate , Fundamentals of Database Systems, Pearson Education.

SECOND YEAR III SEMESTER

Course Code	Title of the Course
31531 /34031	DISCRETE MATHEMATICS

Course Objectives:

- To understand the concepts and operations Set theory, Graph Theory
- To understand and apply the Mathematical Logic in computer science.

Course Requirements:

- Knowledge about Logics and graphs

Course Outcome:

- Acquire the basic knowledge of matrix, set theory, functions and relations concepts needed for designing and solving problems
- Acquire the knowledge of logical operations and predicate calculus needed for computing skill
- Able to design and solve Boolean functions for defined problems

Unit No.	Contents
	BLOCK 1 : MATHEMATICAL LOGIC
1	Mathematical Logic: Statements and Notation - connectives -normal forms – The theory of inference for the statement calculus -
2	Predicate Calculus: The predicate calculus - Inference theory and predicate calculus.
3	Set theory: Sets – Basic concepts – notation - inclusion and equality of sets - the power set
	BLOCK 2 : RELATIONS
4	Relations and ordering properties – relation matrix and graph of a relation
5	Relations Partition – equivalence and compatibility relations
6	Composition and partial ordering: Composition – partial ordering – partially ordered set
	BLOCK 3 : FUNCTIONS
7	Functions – definition – composition – inverse – binary and n-ary operations
8	Other Functions : Characteristic function – hashing function.
	BLOCK 4 : ALGEBRAIC STRUCTURES
9	Algebraic Structures: Algebraic Systems: Examples and General Properties
10	Semigroups and Monoids: Definitions and Examples - Homomorphism of Semigroups and Monoids - Subsemigroups and Submonoids
11	Groups: Definitions and Examples - Cosets and Lagrange's Theorem
12	Normal Subgroups – Algebraic Systems with two Binary Operations.
	BLOCK 5 : GRAPH AND FINITE PROBABILITY
13	Graph theory: Basic concepts – definition – paths - reach - ability and connectedness – matrix representation of graphs - trees.
14	Finite Probability – Probability Distributions – Conditional Probability Independence – Bayes' Theorem – Mathematical Expectation

TEXT BOOKS:

1. J.P. Tremblay and R. Manohar Discrete mathematical structures with applications to Computer Science TMH Publishing Company 2003.
2. Judith L. Gersting, Mathematical Structures for Computer Science, 5th Edition, W.H. Freeman and Company, 2003.

REFERENCE BOOKS:

1. Venkatraman M K, Sridharan N and Chandrasekaran N, Discrete Mathematics, The National Publishing Company, 2004.
2. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science PHI, 2003.
3. Ramasamy, Discrete Mathematical Structures with application to combinatorics, Universities Press, 2006.
4. Bernard Kolman, Roberty C. Busby, Sharn Cutter Ross, Discrete Mathematical Structures, Pearson Education, 2006.
5. Richard Johnsonbaugh, Discrete Mathematics, Fifth Edition, Pearson Education. 2001.
6. Garry Haggard and others, Discrete Mathematics for Computer science, Thomson.

Course Code	Title of the Course
31532 /34032	OPERATING SYSTEMS

Course Objective

- Able to understand the operating system principles
- Able to know the Principles of Deadlock, processor scheduling and memory management.

Course Requirements:

- To be aware of the evolution and fundamental principles of operating system, processes and their communication

Course Outcome

- Students have acquired the knowledge about the types of operating systems
- Students have acquired the knowledge about the functions of operating system

Unit No.	Contents
	BLOCK 1 : INTRODUCTION
1	Introduction: Definition of Operating Systems – Computer System Organization
2	Computer System Architecture – Operating System Structure – Operating System Operations
3	System Structures: Operating System Services – System Calls – System Programs – Operating System Design and Implementation.
	BLOCK 2 : PROCESS CONCEPT
4	Process Concept: Process Scheduling – Operations on Processes – Inter Process Communication
5	Process Scheduling: Scheduling Concepts – Scheduling Criteria – Scheduling Algorithms – Multiple Processor Scheduling
	BLOCK 3 : SYNCHRONIZATION
6	Synchronization: The Critical Section Problem – Synchronization Hardware – Semaphores – Classic Problems of Synchronization – Monitors
7	Deadlocks: Deadlocks Characterization – Methods for Handling Deadlocks
8	Deadlock Prevention – Avoidance – Detection – Recovery from Deadlock.
	BLOCK 4 : MEMORY MANAGEMENT
9	Memory Management Strategies: Swapping – Contiguous Memory Allocation – Paging – Segmentation
	BLOCK 5 : FILE SYSTEM
10	File Concept – Access Methods – Directory
11	Structure – File System Mounting – File Sharing – Protection.
12	Implementing File Systems: File System Structure – File System Implementation
13	Directory Implementation – Allocation Methods – Free Space Management
14	Secondary Storage Structure: Overview of Mass Storage Structure – Disk Structure – Disk Attachment – Disk Scheduling – Disk Management.

TEXT BOOK:

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, “Operating System Principles”, 7th Edition, Wiley India Edition, 2008.

REFERENCE BOOKS:

1. Andrew S.Tanenbaum, Operating Systems Design and Implementation, 3rd edition, Prentice Hall, 2006.
2. Harvey M. Deitel, An Introduction to Operating Systems, 3rd Edition, Addison Wesley 2007.

Course Code	Title of the Course
31533 /34033	OBJECT ORIENTED ANALYSIS AND DESIGN

Course Objective:

- To demonstrate and apply basic object oriented techniques to create and modify object oriented analysis and design models.
- To understand and apply testing techniques for object oriented software

Course Requirement:

- Basic knowledge about oops concepts

Course Outcome:

- Able to learn the various object oriented methodologies and choose the appropriate one for solving the problem
- Understand the concept of analysis, design & testing to develop a document for the project

Unit No.	Contents
	BLOCK 1 : INTRODUCTION
1	Object Oriented System Development : Introduction – Object basics - The Object Model : Evolution – Elements
2	Classes and Objects: Object nature – Relationship among objects – Class nature – Relationships among classes
3	Classes and objects: Building quality classes and objects – System Development Life Cycle
	BLOCK 2 : OBJECT ORIENTED METHODOLOGIES
4	Methodologies : - Rumbaugh Object Modeling Technique, Booch – Jacobson – Shaler/Mellor – Coad/Yardon
5	Patterns : Patterns – Frame Works
6	The Unified Approach – UML – Static and Dynamic Model – UML diagrams
	BLOCK 3 : OBJECT ORIENTED ANALYSIS
7	Object Oriented Analysis - Identifying Use Cases – Use Case Model – Documentation
8	Classification: Identifying Classes – Noun Phrases Approach – Common Class Pattern Approach
9	Use Case Driven Approach – Identifying Object Relationship Attributes and Methods.
	BLOCK 5 : OBJECT ORIENTED DESIGN
10	Object Oriented Design : Introduction – Design Process – Design Axioms – Designing Classes – Visibility – Refining Attributes –
11	Designing Methods - Access Layer Design – View Layer Design
12	Managing Analysis And Design – Evaluation Testing – Impact of object oriented testing -
	BLOCK 5 : CODING AND MAINTENANCE
13	Coding and Maintenance: Coding – Maintenance – Metrics
14	Case Study Foundation Class Library – Client/Server Computing.

Text Books:

1. Grady Booch, Robert A.Maksimchuk et.al, Object Oriented Analysis and Design with applications, Pearson Education, 3rd Edition, 2009.
2. Ali Bahrami, Object Oriented System Development, Tata McGraw Hill Edition, 2008.

Reference Books:

1. James Rumbaugh et.al, Object Oriented Modeling and Design, Addison Wesley, 2006.
2. Larman, Applying UML & Patterns, An Introduction to Object Oriented Analysis and Design, Pearson Education, 2nd Edition, 2003.
3. Martin Fowler, Kendall Scott , UML, Distilled Addison Wesley, 2004.
4. Ivar Jacobson Object Oriented Software Engineering: A Use Case Driven Approach Addison Wesley, 2004.

Course Code	Title of the Course
31534 /34034	OPERATING SYSTEM LAB

Syllabi based on operating system theory

Objective of the course

- To learn and get familiar with unix/ubundo operating system
- To understand the functions unix/ubundo operating system through basic commands

Course outcome

On completion of the course

- Students will attain hands on experience in linux operating system.
- Basic unix commands their syntax and purpose can be well understood by the students
- Shell commands and their syntax and purpose can be well understood by the students

Unit No.	Contents
	BLOCK 1 INTRODUCTION
1	Introduction Operating system ,objective, History, Features of Unix
2	Kernal and shell
3	Unix file system: File and common commands-Shell-More about files-Directories-Unix system-Basics of file-Directories and filenames-
	BLOCK 2 : UNIX PERMISSIONS
4	Permissions- Inodes-Directory hierarchy-Devices-the grep family-Other filters
5	Stream editor sed - awk pattern scanning and processing language-files and good filters.
6	Wild card characters
	BLOCK 3 : UNIX COMMANDS
7	Unix commands with syntax: Syntax and unix commands
8	Unix shells: History of unix shells
9	Deciding on a shell
	BLOCK 4 : SHELL COMMADS - FILES
10	Shell Command files
11	Bourne shell: Bourne shell programming
12	Shell programming files: Shell programming on files
	BLOCK 5 : MENU DRIVEN SHELL PROGRAM:
13	Menu Driven File handling
14	Menu Driven shell program – file: edit, create and delete file using menu

REFERENCE BOOKS:

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, “Operating System Principles”, 7th Edition, Wiley India Edition, 2008.
2. Andrew S.Tanenbaum, Operating Systems Design and Implementation, 3rd edition, Prentice Hall, 2006.
3. Harvey M. Deitel, An Introduction to Operating Systems, 3rd Edition, Addison Wesley 2007.

SEMESTER IV

Course Code	Title of the Course
31541 /34041	ACCOUNTING AND FINANCIAL MANAGEMENT

Course Objectives:

- To understand the process of estimating the cost of a particular product.
- To Prepare the estimate for various business activities such as purchase, sale, production and cash budgets

Course Requirements:

- Basic principles of Accounting

Course Outcome:

- Able to do balance sheet preparation and do analysis
- Able to do the budget preparation and control of a company

Unit No	Contents
	BLOCK 1 : INTRODUCTION - Financial Accounting:
1	Financial Accounting: Meaning and Scope – Principles – Concepts – Conventions
2	Accounting process: Journal - Ledger – Trail Balance – Trading Account – Profit and Loss Account – Balance Sheet
3	Accounting Ratio Analysis – Funds Flow Analysis –Cash Flow Analysis – Computerized account.
	BLOCK 2 : COST AND MANAGEMENT ACCOUNTING
4	Introduction: Meaning Scope and uses of cost and management accounting – Elements of Cost
5	Cost Sheet – Marginal Costing and Cost Volume Profit Analysis
6	Break Even Analysis: Concept, Applications and Limitations
	BLOCK 3 : STANDARD COSTING AND BUDGETING:
7	Introduction : Concept and importance standard costing - Variance Analysis – Material – Labor – Overhead – Sales – Profit Variances -
8	Budgets and Budgetary Control – Meaning and Types of budgets – Sales Budget – Production Budget
9	Budgets: Cash Budget – Master Budget – Flexible budgeting – Zero Base Budgeting.

	BLOCK 4 : FINANCIAL MANAGEMENT
10	Introduction: Objectives and Functions of Financial Management – Risk – Return Relationship –Time Value of Money
11	Capital Budgeting: Basic Methods of Appraisal of investments –
12	Working Capital: Concepts of working Capital ,Factors Affecting working Capital – Estimation of working capital requirements
	BLOCK 5 : COST OF CAPITAL
13	Cost of Capital Capital Structure and Dividend: Meaning and types of Cost of Capital – computation of cost for debt and equity sources of capital and weighted average cost of capital

TEXT BOOKS:

1. Maheswari S N, Financial and Management Accounting, Sultan Chand & Sons, 2003.
2. Pandey I M, Financial Management, 4th Edition, Vikas Publications, 2002.

REFERENCE BOOKS:

1. Ambrish Gupta, Financial Accounting for Management, Pearson Education, 2005
2. S.P. Iyengar, “Cost and Management Accounting”, Sultan Chand & Sons.
3. I. M. Pandey, “Elements of Management Accounting”, Vikas Publishing House.
4. Shula and T.S.Grewal, “Advanced Accounting”, S.Chand and Company, 2010
5. S.N.Maheswari, “Management Accounting & Financial Accounting”, Vikas Publications 2010
6. Ravi M Kishore, Management Accounting and Financial Analysis”, Taxmons 2010
7. Khan and Jain, Management accounting: Text, problems and cases, 2011

Course Code	Title of the Course
31542 /34042	COMMUNICATION SKILLS

Course Objectives:

- To enable the students to learn the basics of communication skills, soft skills and quantitative aptitude.
- To improve the written communication skills so as to write reports and letters.
- To enable the students to speak English with correct accent and pronunciation.
- Interact efficiently in real life situation in work place

Course Requirements:

- Basic English knowledge in grammar

Course Outcome:

- Understood the basics of communication skills and soft skills
- Acquired knowledge in quantitative aptitude
- Take part in professional and social communication
- Make oral presentations
- Engage in debates
- Face Interviews
- Participate in Group Discussion

Unit No	Contents
	BLOCK 1 : IMPORTANCE OF COMMUNICATION
1	Communication: Importance of Communication: – Principles of effective communication
2	Levels of communication (Extrapersonal, Interpersonal, Intrapersonal and Mass Communication)
3	Channels of communication (Downward communication, Upward communication, Horizontal communication and Diagonal communication) Barriers to communication
	BLOCK 2 : CONVERSATIONS SKILLS
4	Soft Skills (Importance, Definition and attributes) – Verbal and Non-Verbal Communications
5	Telephone conversations: Do's and Don'ts – Modes of conversation – Greeting, Requesting, Thanking, Congratulating, Introducing, Apologizing, Agreeing/Disagreeing, permitting/Not permitting
	BLOCK 3 PRESENTATION SKILLS
6	Introduction: Planning (Analyzing audience and locale)
7	Preparing (Introduction, Middle and End) Practice and presentation
8	(Nuances and Delivery – Kinesics, Proximics, paraliquistics, chronemics) Audio visual Aids.
	BLOCK 4 : GROUP COMMUNICATION

9	Group Communication: Group discussion – Purpose - Process of Group Discussion - Presentation - Getting Started - Art of Guiding and Controlling Discussion - Personality test through Group Discussion - Lateral thinking - Participation techniques - Mock Group Discussion.
10	Interviews and job interviews What and Why? - Types of Interviews - Understanding the intricacies - Planning for Interviews - Answering Skills - Effective Communication during Interviews - IPS - Mock Interview.
11	Meetings Meaning - Importance - Objectives - Leading and participating in meetings - Communication skills for meetings - Mock Meetings - Seminars. Skills Needed for Team Work.
BLOCK 5 : WRITING SKILLS	
12	Writing Letters (Job Application, resume, curriculum vitae) Effective writing - Report writing - Speech writing
13	E-mail and Advertising – Writing of Agenda, Agenda writing - Letters - Articles writing - Improving English language writing - When to write and when not to write.
14	Minutes and memos – report writing.

TEXT BOOK:

1. Green Level (1984) Building English Skills USA: MC Dougal, Little.
S.R.Sharma (2006) Communication Skills in English Jaipur: Mark Publishers

REFERENCE BOOKS:

1. Green Rajeevan and P.Kiranmani Dutt. (2006) Basic Communication Skills New Delhi: Foundation Books
2. Martin Hewings(2004) Pronunciation Practice Activities United kingdom: The Cambridge University Press.

Course Code	Title of the Course
31543 /34043	INTERNET AND JAVA PROGRAMMING

Course Objectives:

- To provide an overview of working principles of internet, web related functionalities
- To understand and apply the fundamentals core java, packages, database connectivity for computing

Course Requirements:

- Basic knowledge of internet and programming principles

Course Outcome:

- Able to understand the internet standards and recent web Technologies
- Able to implement, compile, test and run Java program,
- Able to make use of hierarchy of Java classes to provide a solution to a given set of requirements found in the Java API

Unit No.	Contents
	BLOCK 1 : INTRODUCTION
1	Basic Internet Concepts: Connecting to the Internet – Domain Name System – E-mail
2	The World Wide Web – Internet Search Engines – Web Browsers – Chatting and conferencing on the Internet
3	Online Chatting –Messaging – Usenet Newsgroup – Internet Relay chat (IRC) – FTP – Telnet.
	BLOCK 2 : FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING
4	Basic concepts of OOP – Benefits – Applications . Java Evolution: Features – how java differs from C and C++ - java and internet- java support system – java environment
5	Overview of Java Language –Introduction – Simple Java Program – Comments – Java Program Structure – Tokens – Java Statements – Implementing a Java Program – JVM – Command Line Arguments. Constants – Variables – Data Types – Type Casting.
6	Operators and Expressions: Arithmetic Operators – Relational, Logical, Assignment, Increment and Decrement, Conditional, Bitwise, Special Operators – Arithmetic Expressions, Evaluation of Expression – Precedence of Arithmetic Operators – Type Conversions – Operator Precedence and associativity – Mathematical Functions. Decision Making and Branching: If –if.....else –Nesting of if..... Else – else if–switch. Decision Making and Looping: While – do – for – jump in loops – labeled loops.
	BLOCK 3 : CLASSES, OBJECTS AND METHODS

7	class: Defining a class –fields –methods –creating objects – accessing class members – constructors – methods overloading –static members –nesting of methods – Inheritance –overriding methods –final variables-classes –methods
8	Arrays, Strings and Vectors : One dimensional Arrays –creating of array – Two dimensional arrays- strings –vectors –Wrapper classes – Enumerated Types - Interfaces: Multiple Inheritance
9	Packages: Defining interface –Extending interfaces – Implementing Interfaces - Putting Classes Together
BLOCK 4: MULTITHREADING , EXCEPTION AND APPLETS	
10	Multithreaded Programming – Creating Threads –Extending the thread class – Stopping and Blocking a thread –Life cycle of a thread –using thread methods – Thread Exceptions –Priority –Synchronization –Implementing the ‘Runnable’ Interface
11	Managing Error and Exceptions: Types of errors –Exceptions –Syntax of Exception Handling code – Multiple Catch statements –using finally statement – Throwing our own Exceptions – using exceptions for Debugging - Graphics Programming: The Graphics Class – Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Charts.
12	Applet Programming: How applets differ from Applications – preparing to write applets – Building Applet Code – Applet life cycle – creating an Executable Applet – Designing a Web Page – Applet Tag – Adding Applet to HTML file – Running the Applet – Passing parameters to Applets – Displaying Numerical values – Getting input from the user
BLOCK 5 : MANAGING INPUT/OUTPUT FILES IN JAVA	
13	Introduction – concept of streams –stream classes – byte stream classes – character Stream
14	I/O classes: –using stream –using the file class –Input / output Exceptions – creation of files – Reading / writing characters – reading writing bytes Random access files- Interactive input and output –Other stream classes

Text Books:

1. R. Krishnamoorthy and S. Prabhu, Internet and Java Programming, New Age International Publishers, 2004 (Unit I).
2. Programming with Java, 4e, E. Balagurusamy, Tata McGraw-Hill, 2010.

Reference books:

1. Deitel, Deitel and Nieto, Internet and World Wide Web – How to program, Pearson Education, 2000.
2. Naughton and H.Schildt, Java 2 - The complete reference, Tata McGraw-Hill, Fourth edition, 2006.
3. Elliotte Rusty Harold, Java Network Programming, O’Reilly Publishers, 2000.
4. B.Mohamal Ibrahim , Java : J2SE – A Practical Approach, Firewall media, 2006.
5. Cay S. Horstmann, Gary Cornell, Core Java, Volume I and II, 5th Edition, Pearson Education, 2003.
6. Topley, J2ME in A Nutshell, O’Reilly Publishers, 2002.
7. Hunt, Guide to J2EE Enterprise Java, Springer Publications, 2004.
8. Ed Roman, Enterprise Java Beans, Wiley Publishers, 1998.

Course Code	Title of the Course
31544 /34044	INTERNET AND JAVA PROGRAMMING LAB

Course Objective:

- To understand and practice markup languages
- To understand and practice embedded dynamic scripting on client side Internet Programming
- To understand and practice web development techniques on client-side

Course Requirement:

- Basic concepts of Web and Java programming

Course Outcome:

- Explore markup languages features and create interactive web pages using them
- Learn and design Client side validation using scripting languages
- Acquire knowledge about Open source JavaScript libraries
- Able to design front end web page and connect to the back end databases.

Experiments based on Internet Programming Theory

Unit No.	Contents
	BLOCK 1 : JAVA FUNDAMENTAL PROBLEMS:
1	Simple Java Problems
2	class and objects
3	Conditional control using java
4	Looping using java
	BLOCK 2 : OOP CONCEPTS
5	Function overloading programs
6	Operator overloading programs
7	Inheritance programs, Packages
8	Polymorphism programs Message passing programs
	BLOCK 3 : THREAD & VIRTUAL FUNCTION
9	Threads
10	Virtual function programs
	BLOCK 4 : I/O AND EXCEPTION HANDLING
11	Exception handling programs
12	I/O manipulation programs,
	BLOCK 4 :NETWORK PROGRAMMING
13	Applet programs
14	Implementation of simple network programs using java

Reference books:

1. R. Krishnamoorthy and S. Prabhu, Internet and Java Programming, New Age International Publishers, 2004 (Unit I).
2. Programming with Java, 4e, E. Balagurusamy, Tata McGraw-Hill, 2010.
3. Deitel, Deitel and Nieto, Internet and World Wide Web – How to program, Pearson Education, 2000.
4. Naughton and H.Schildt, Java 2 - The complete reference, Tata McGraw-Hill, Fourth edition, 2006.
5. Elliotte Rusty Harold, Java Network Programming, O'Reilly Publishers, 2000.
6. B.Mohamal Ibrahim , Java : J2SE – A Practical Approach, Firewall media, 2006.
7. Cay S. Horstmann, Gary Cornell, Core Java, Volume I and II, 5th Edition, Pearson Education, 2003.
8. Topley, J2ME in A Nutshell, O'Reilly Publishers, 2002.
9. Hunt, Guide to J2EE Enterprise Java, Springer Publications, 2004.
10. Ed Roman, Enterprise Java Beans, Wiley Publishers, 1998.

**THIRD YEAR SEMESTER
IV**

Course Code	Title of the Course
31551 /34051	COMPUTER NETWORKS

Course Objectives:

- To understand networking concepts and basic communication model
- To understand network architectures and components required for data communication.

Course Requirements:

- Basic knowledge of networking

Course Outcome:

- Able to understand the working principles of various application protocols
- Acquire knowledge about security issues and services available

Unit No.	Contents
BLOCK 1 : INTRODUCTION & PHYSICAL LAYER	
1	Introduction; Computer Networks - Applications - Line configuration - Topology - Transmission Modes
2	Categories of Network: LAN, MAN, WAN - OSI Layer.
3	Physical Layer: Analog and Digital Signals Performance - Transmission Media
BLOCK 2 : DATA LINK LAYER	
4	Data Link Layer: Error Detection and correction – Introduction – Block Coding – Cyclic Redundancy Check – Framing – Flow and error Control –
5	Data link layer protocols: stop - wait protocol and sliding window protocol - ARQ, Go-back-n ARQ, selective - repeat ARQ.
6	Multiple Access Protocols: ALOHA – CSMA – CSMA/CD – CSMA/CA.
BLOCK 3 : NETWORK LAYER	
7	Introduction: Circuit switching - packet switching - message switching - Virtual circuit and Datagram subnets
8	Routing algorithm : Static routing -shortest path routing, Flooding, Flow based routing - Dynamic routing - distance vector routing, link state routing
9	Other Routing Algorithms: Hierarchical routing, Broad cast, Multi cast routing - Congestion, Control Algorithms
BLOCK 4 : TRANSPORT LAYER	
10	Introduction: Process to process delivery – UDP – TCP - Connection oriented Vs connectionless services.
11	Applications and services: Domain name system - Remote Logon – Mail Exchange - File Transfer
12	Remote Procedure Call - Remote File Access – WWW and HTTP – SNMP.

BLOCK 5 : NETWORK SECURITY	
13	Introduction: Cryptography – Encryption model – Transposition and Substitution Chipers – Cryptographic principles
14	Symmetric key cryptography: DES – AES – Asymmetric key cryptography: RSA – Security services.

Text Books:

1. Computer Networks, 3rd Edition, Andrew S Tanenbaum, Pearson Education, 2010.
2. Data Communications and Networking, 4th Edition, Behrouz A. Forouzan, TMH, 2009.

Reference Books:

1. Data and Computer Communications, 8th Edition, William Stallings, Prentice Hall.
2. An Engineering Approach to Computer Networks, 2nd Edition, S.Keshav, Pearson Education, 2008

Course Code	Title of the Course
31552 /34052	DATA MINING AND WAREHOUSING

Course Objective:

- This course presents on depth of to data mining techniques; association rule, clustering, classification, web mining, temporal and sequential data mining and provide a practical exposure using data mining tool orange.

Course Requirements:

- Basic Concepts of Database

Course Outcome:

On successful completion of the course the students should have:

- Understand the data mining techniques, classification and web mining

Unit No.	Contents
	BLOCK 1 : DATA MINING and WAREHOUSING INTRODUCTION
1	Data Warehousing Introduction – Definition-Architecture-Warehouse Schema-Warehouse server-OLAP operations. Data Warehouse technology – Hardware and operating system
2	Data Mining - Definition – DM Techniques – current trends in data mining - Different forms of Knowledge – Data selection, cleaning, Integration, Transformation, Reduction and Enrichment.
3	Data: Types of data - Data Quality - Data Preprocessing - Measures of similarity and dissimilarity. Exploration: Summary statistics – Visualization.
	BLOCK 2 : ASSOICATION RULE MINING AND CLASSIFICATION
4	Association rules: Introduction – Methods to discover association rule – Apriori algorithm Partition Algorithm
5	AR Algorithms: Pincher search algorithm – Dynamic Item set algorithm – FP Tree growth algorithm.
6	Classification: Decision Tree classification – Bayesian Classification – Classification by Back Propagation.
	BLOCK 3 : CLUSTERING TECHNIQUES AND MACHINE LEARNING
7	Introduction – Clustering Paradigms – Partitioning Algorithms – K means & K Mediod algorithms – CLARA – CLARANS – Hierarchical clustering – DBSCAN – BIRCH – Categorical Clustering algorithms – STIRR – ROCK – CACTUS.
8	Introduction to machine learning – Supervised learning – Unsupervised learning – Machine learning and data mining.
9	Neural Networks: Introduction – Use of NN – Working of NN Genetic Algorithm: Introduction –Working of GA.
	BLOCK 4 : WEB MINING AND VISUAL DATA MINING
10	Introduction –Web content mining – Web structure mining –Web usage mining –Text mining –Text clustering, Temporal mining -Spatial mining
11	Visual data mining – Knowledge mining – Various tools and techniques for implementation using weka, Rapidminer and Matlab.
	BLOCK 5 : INTRODUCTION TO BIG DATA ANALYTICS
12	Big Data Characteristics- Types of Big Data- Traditional Versus Big Data Approach

13	Technologies Available for Big Data
14	Hadoop – Introduction - What is Hadoop? - Core Hadoop Components - Hadoop Ecosystem - Physical Architecture - Hadoop Limitations

Text Books:

1. Arun K Pujari, “Data Mining Techniques”, University press, 2008.
2. C S R Prabhu, “Data Warehousing – concepts, techniques and applications “, 2nd Edition, Prentice Hall of India, 2002.
3. Radha Shankarmani, M Vijayalakshmi, “Big Data Analytics”, Wiley Publications, first Edition, 2016

Reference Books:

1. Jaiwei Han, Michelle Kamber, “Data Mining: Concepts and Techniques”, Harcourt India / Morgan Kauffman publishers, 2008.
2. Alex Berson, Stephen J. Smith , “Data Warehousing , Data Mining & OLAP”, Tata McGraw Hill, 2004.
3. Seema Acharya, Subhashini Chellappan, “Big Data and Analytics”, Wiley Publication, first edition. Reprint in 2016
4. DT Editorial Services, “Black Book- Big Data (Covers Hadoop 2, MapReduce, Hive, Yarn, PIG, R, Data visualization)”, Dream tech Press edition 2016.

Course Code	Title of the Course
31553 /34053	VISUAL PROGRAMMING WITH .NET

Course Objective:

To develop an understanding of Visual Basic .Net
 To develop the skills necessary to create software solutions using VB with .Net
 To learn how to analyze certain types of problems with a software solution in mind

Course Requirements:

- Basic knowledge of Visual Basic

Course Outcome:

- Able to understand and design the solution to a problem using VB. Net
- Understand and implement the features of .Net for providing programmed solutions to complex problems

Unit No	Contents
	BLOCK 1 : INTRODUCTION
1	Introduction - What Is Visual Studio ? - Navigating the Visual Studio - The Menu - Toolbar - Work Area
2	Toolbox - Solution Explorer - Status Bar - Managing VS Windows
3	Visual Studio Project Types - Windows Projects - Web Projects - Office Projects - SharePoint Projects - Database Projects
	BLOCK 2 : C# AND VB.NET
4	Basic Syntax - Code Skeleton - The Main Method - The Program Class - The First Program Namespace - VS Code Editor - Class and Member Locators – Bookmarks - Running Programs - Primitive Types and Expressions - Enums - Branching Statements - Loops
5	Creating Classes - Class Inheritance – Class Snippet - Writing Methods - Parameters Passing - Returning Data
6	Method Snippets - Coding Fields and Properties - Declaring and Using Properties - The Property Snippet
	BLOCK 3 : UNDERSTANDING DELEGATES AND EVENTS
7	Events - Delegates - Handler Code - Implementing Interfaces - The interface Snippet - Applying Arrays and Generics -
8	Creating and Building Projects - Constructing Solutions and Projects - Navigating the Solution Explorer - Examining Property Settings - Assembly Name - Default Namespace - Target Framework - Output Type

9	Building Projects :Startup Object - Icon and Manifest - Compiling Applications - Rebuilding Solutions/Projects - Cleaning Solutions/Projects - Managing Dependencies, Compilation Settings - Navigating with Class View - Using the Class Designer - Class Designer Code Generation
	BLOCK 4 : DEBUGGING WITH VISUAL STUDIO
10	Debugging methods: Breakpoints - Stepping Through Code – Inspecting Application State - Locals and Autos Windows - Watch Windows - The Immediate Window - The Call Stack Window - The Quick Watch Window - Watching Variables with Pin To Source - Working with IntelliTrace
11	Working with Databases - Server Explorer - Creating a Database - Adding Tables - Relating Tables with Foreign Keys - Adding Stored Procedures - Configuring Database Options
	BLOCK 5 : BUILDING PROGRAMS WITH VS 2010
12	Building Desktop Applications with WPF - Starting a WPF Project - Understanding Layout - Grid Layout - StackPanel Layout - DockPanel Layout - WrapPanel Layout - Canvas Layout
13	Using WPF Controls - Managing Windows for Controls - Setting Properties - Handling Events - Coding Event Handlers - Working with Data in WPF - Data Source - Configuring a ComboBox
14	Reading and Saving Data - Using the DataGrid - Summary -Creating Web Applications with ASP.NET MVC - Designing Silverlight Applications - Deploying Web Services with WCF

Text Book:

1. Joe Mayo, Visual Studio 2010 - A Beginner's Guide, Tata Mc Graw Hill Edition, 2010.

Reference Books:

1. Nick Randolph, David Gardner, Professional Visual Studio 2010, Wiley Publishing 2010.
2. Andrew Moore, Visual Studio 2010 All-in-One For Dummies, Wiley Publishing, 2010.

Course Code	Title of the Course
31554 /34054	VISUAL BASIC .NET LAB

Course Objective:

To develop an understanding of Visual Basic .Net
 To develop the skills necessary to create software solutions using VB with .Net
 To learn how to analyze certain types of problems with a software solution in mind

Course Requirements:

- Basic knowledge of Visual Basic

Course Outcome:

- Able to understand and design the solution to a problem using VB. Net
- Understand and implement the features of .Net for providing programmed solutions to complex problems

Experiments based on Visual Programming with .NET Theory

Unit No.	Contents
	BLOCK 1 : SIMPLE APPLICATIONS
1	Simple Applications: Developing simple applications using VB.NET <ol style="list-style-type: none"> a. Finding factorial Value b. Money Conversion c. Quadratic Equatin d. Temperature Conversion e. Login control
2	Login form: Create and Validate Login Form, Program to design Class, Program to demonstrate Inheritance, Polymorphism and Interfaces.
	BLOCK 2 : CONTROLS
3	Controls: Advance Controls, Common Dialog Controls. <ol style="list-style-type: none"> 2. Adrotator Control 3. Calendar control <ol style="list-style-type: none"> a. Display messages in a calendar control b. Display vacation in a calendar control c. Selected day in a calendar control using style d. Difference between two calendar dates 4. Treeview control a) Treeview control and datalist b) Treeview operations 5. Validation controls
4	Active X Controls: Working with intrinsic controls and ActiveX controls
	BLOCK 3 : MDI AND DATA CONTROLS
5	MDI: Application with multiple forms

6	Data controls: Application using data controls
BLOCK 3 : DIALOGS AND MENU	
7	Dialogs: Application with dialogs
8	Common Dialogs: Application using Common Dialogs
9	Menus: Application with Menus
BLOCK 4 : EVENTS AND DATABASE	
10	Events and Database: Drag and Drop Events Database Management Creating ActiveX Controls
11	DataGridView: ADO.NET Code to show records in DataGridView Control. <ol style="list-style-type: none"> 1. Databinding using datalist control 2. Datalist control templates 3. Databinding using datagrid 4. Datagrid control template 5. Datagrid hyperlink 6. Datagrid button column 7. Datalist event 8. Datagrid paging
12	Database operations: ADO.NET Code to perform Insert, Delete, Update and Select operations.
BLOCK 5 : CRYSTAL REPORTS AND WEB APPLICATION	
13	Crystal Reports
14	Web Application using ASP.NET that uses validation controls.

Reference Books:

1. Joe Mayo, Visual Studio 2010 - A Beginner's Guide, Tata Mc Graw Hill Edition, 2010.
2. Nick Randolph, David Gardner, Professional Visual Studio 2010, Wiley Publishing 2010.
3. Andrew Moore, Visual Studio 2010 All-in-One For Dummies, Weiley Publishing, 2010.

SEMESTER VI

Course Code	Title of the Course
31561 /34061	CLOUD COMPUTING

Course Objective:

Lets learner to understand how to access all applications and documents from everywhere in the world, freeing from the confines of the desktop and making it easier for group members in different locations to collaborate.

Course Requirements:

Basic knowledge about internet and its application.

Course Outcome:

Understood the importance of cloud computing and its services.

Unit No.	Contents
	BLOCK 1 : INTRODUCTION
1	Fundamentals :Cloud Computing – History – Working of cloud computing – Cloud computing today – Pros and cons of Cloud Computing – Benefits of cloud computing
2	Non users of Cloud computing – Developing cloud services – Pros and Cons of Cloud service Development
3	Types of Cloud Service Development – Discovering Cloud Services development services and tools.
	BLOCK 2 : CLOUD COMPUTING FOR EVERYONE
4	Centralizing Email Communications – Collaborating of Grocery lists – Collaborating on To-Do lists –
5	Collaborating on Household budgets – Collaborating on Contact lists – Communicating across the community – Collaborating on Schedules
6	Collaborating on group projects and events – Cloud computing for corporation.
	BLOCK 3 : CLOUD SERVICES
7	Exploring online calendar applications – Exploring online scheduling applications – Exploring online planning and task management – Collaboration on event management –
8	Collaboration on Contact Management – Collaboration on Project Management –
9	Collaborating on Word Processing and Databases – Storing and Sharing files and other online content.
	BLOCK 4 : ISSUES IN CLOUD
10	Federation in cloud – Four levels of federation – Privacy in cloud
11	Security in Cloud –Software as a security service – Case Study: Aneka – service level agreements

12	Cloud Storage: Over view of cloud storage – Cloud storage providers – Amazon S3 – Cloud file system – Map Reduce – Hadoop
	BLOCK 5 : CLOUD DEPLOYMENT TOOLS:
13	Study of open source cloud platforms – Eucalyptus
14	Nimbus – Open Nebula

Text Books:

1. Michael Miller, “Cloud computing – Web based applications that change the way you work and collaborate online”, Pearson Education Inc., 2008
2. John W.Rittinghous, James F.Ransome, “Cloud Computing: Implementation, Management and Security”, CRC Press 2010.

Books for Reference:

1. Danielle Ruest and Nelson Ruest, “Virtualization: A Beginners’s Guide”, McGraw Hill,2009.
2. Tom White, “Hadoop: The Definitive Guide”, O’RIELLY Media 2009.
3. Rajkumar Buyya, James Broberg, Andrezej Goscinski, “Cloud computing – Principles and Paradigms”, John Wiley and Sons, 2011.

Course Code	Title of the Course
31562 /34062	SOFT COMPUTING

Course Objective:

- To learn the key aspects of Soft computing
- To know about the components and building block hypothesis of Genetic algorithm.
- To study the fuzzy logic components

Course Requirements:

- Basic concepts of Fuzzy Set and Neural Network

Course Outcome:

- Write Genetic Algorithm to solve the optimization problem
- Understand fuzzy concepts and develop a Fuzzy expert system to derive decisions.

Unit No.	Contents
	BLOCK 1 : INTRODUCTION
1	Introduction: Soft Computing Constituents – Soft Computing Vs Hard Computing – Characteristics - Applications
2	Artificial Neural Network (ANN): Fundamental Concept – Application Scope - Basic Terminologies – Neural Network Architecture – Learning Process
3	Fundamental Models of ANN: McCulloch-Pitts Model – Hebb Network – Linear Separability.
	BLOCK 2 : SUPERVISED AND UNSUPERVISED LEARNING NETWORKS
4	Perceptron Network – Adaline and Madaline Networks – Back Propagation Network
5	Radial Basis Function Network. Associative Memory Networks – BAM - Hopfield Network - Boltzmann Machine.
6	Unsupervised Learning Networks: Kohonen Self Organizing Network – Counter Propagation Network – ART Network.
	BLOCK 3: FUZZY SETS
7	Fuzzy Sets: Basic Concept – Crisp Set Vs Fuzzy Set - Operations on Fuzzy Set – Properties of Fuzzy Sets
8	Fuzzy Relations: Concept – Fuzzy Composition – Fuzzy Equivalence and Tolerance Relation
9	Membership Functions: Features – Fuzzification – Methods of Membership value assignments – Defuzzification – Methods.
	BLOCK 4 : FUZZY ARITHMETIC
10	Fuzzy Arithmetic – Extension Principle – Fuzzy Measures
11	Fuzzy Rules and Fuzzy Reasoning: Fuzzy Propositions – Formation of Rules – Decomposition of Rules – Aggregation of Rules – Approximate Reasoning
12	Fuzzy Inference and Expert Systems – Fuzzy Decision Making – Fuzzy Logic Control Systems.
	BLOCK 5 : GENETIC ALGORITHM
13	Genetic Algorithm: Fundamental Concept – Basic Terminologies – Traditional Vs Genetic Algorithm - Elements of GA - Encoding - Fitness Function

14	Genetic Operators: Selection – Cross Over - Inversion and Deletion - Mutation – Simple and General GA - The Schema Theorem - Classification of Genetic Algorithm – Genetic Programming – Applications of GA.
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Text Book:

1. S.N. Sivanandam, S.N. Deepa, “Principles of Soft Computing”, Wiley India, 2007.

Reference Books:

1. J.S.R. Jang, C.T. Sun, E. Mizutani, “Neuro-Fuzzy and Soft Computing”, Prentice Hall India, 2004
2. S. Rajasekaran, G.A.V. Pai, “Neural Networks, Fuzzy Logic, Genetic Algorithms”, Prentice Hall India, 2004.

Course Code	Title of the Course
31563 /34063	BIG DATA ANALYTICS

Course Objective:

Able to understand the characteristics of Big Data.
To know about the link analysis, mapreduce and social networks

Course Requirement:

Basic Knowledge about data mining

Course Outcome:

Understood the importance of Big Data Analytics and social networks

Unit No.	Contents
	BLOCK 1 : INTRODUCTION TO BIG DATA
1	Big Data Characteristics- Types of Big Data- Traditional Versus Big Data Approach
2	Technologies Available for Big Data
3	Hadoop – Introduction - What is Hadoop? - Core Hadoop Components - Hadoop Ecosystem - Physical Architecture - Hadoop Limitations
	BLOCK 2 : MapReduce
4	MapReduce and The New Software Stack- MapReduce- Algorithms Using MapReduce -
5	Finding Similar Items – Introduction - Nearest Neighbor Search - Applications of Nearest Neighbor Search- Similarity of Documents
6	Collaborative Filtering as a Similar-Sets Problem - Recommendation Based on User Ratings- Distance Measures.
	BLOCK 3 : MINING DATA STREAMS
7	Introduction- Data Stream Management Systems- Data Stream Mining - Examples of Data Stream Applications -
8	Stream Queries- Issues in Data Stream Query Processing - Sampling in Data Streams - Filtering Streams - Counting Distinct Elements in a Stream
9	Querying on Windows – Counting Ones in a Window -Decaying Windows.
	BLOCK 4 : LINK ANALYSIS
10	Introduction- History of Search Engines and Spam –
11	PageRank - Efficient Computation of PageRank - Topic-Sensitive PageRank- Link Spam- Hubs and Authorities
12	Recommendation Systems : A Model for Recommendation Systems - Collaborative-Filtering System - Content-Based Recommendations - Mining Social Network Graphs .
	BLOCK 5 : SOCIAL NETWORKS
13	Introduction - Applications of Social Network Mining - Social Networks as a Graph - Types of Social Networks
14	Social Graphs: Clustering of Social Graphs - Direct Discovery of Communities in a Social Graph - SimRank-Counting Triangles in a Social Graph

Text Book:

1. “Big Data Analytics”, Radha Shankarmani, M Vijayalakshmi, Wiley Publications, first Edition, 2016

Books for Reference:

1. Seema Acharya, Subhashini Chellappan, “Big Data and Analytics”, Wiley Publication, first edition. Reprint in 2016
2. DT Editorial Services, “Black Book- Big Data (Covers Hadoop 2, MapReduce, Hive, Yarn, PIG, R, Data visualization)”, Dream tech Press edition 2016.

Course Code	Title of the Course
31564 /34064	MINI PROJECT

Course Objective:

- To help the student to develop his/her ability to apply multi-disciplinary concepts, cutting edge technologies, software tools and techniques to solve programming problems.

Course Requirement:

- Basic concepts of Web and C/ Java /VB /ASP .NET programming

Course Outcome:

- Explore markup languages features and create interactive web pages
- Able to design front end web page and connect to the back end databases.
- Able to study, design, develop , implement and maintain software applications

Syllabi

Student should be able to design, develop and implement mini project based on latest cutting edge technologies using latest software.

Unit No	Contents
	BLOCK 1 : INTRODUCTION AND STUDY PHASE
1.	Define the Abstract of the project
2.	System Analysis :Identify the Problem (Aim & Objectives)
3.	Problem description
4.	Scope of the Problem
5.	Motivation
6.	Identify the existing system and its Limitations, Feasibility study
7.	Proposed system to overcome limitations
	BLOCK 2 : SYSTEM DESIGN
8.	System Design : Prepare Input / Output Design, Prepare Form Design
9.	Prepare software design (UML Diagram, Data Dictionary, Use case, Activity diagram, E-R diagram)
	BLOCK 3 : SYSTEM DEVELOPMENT
10.	System Development and Implementation the project
	BLOCK 4 : SYSTEM TESTING
11.	System Testing and maintenance of the project
	BLOCK 5 : DOCUMENTATION

12.	Prepare the mini project documentation.
13.	Sample Source Code
14.	Reports/Screen Layouts

Reference Books:

1. Grady Booch, Robert A.Maksimchuk et.al, Object Oriented Analysis and Design with applications, Pearson Education, 3rd Edition, 2009.
2. Ali Bahrami, Object Oriented System Development, Tata McGraw Hill Edition, 2008.
3. James Rumbaugh et.al, Object Oriented Modeling and Design, Addison Wesley, 2006.
4. Larman, Applying UML & Patterns, An Introduction to Object Oriented Analysis and Design, Pearson Education, 2nd Edition, 2003.
5. Martin Fowler, Kendall Scott , UML, Distilled Addison Wesley, 2004.
6. Ivar Jacobson Object Oriented Software Engineering: A Use Case Driven Approach, Addison wesley, 2004.

M.Sc (Chemistry)

Sl. No.	Cours Code	Title of the Course	CIA Max.	ESE Max.	TOT Max.	Credit .
FIRST YEAR						
I Semester						
1.	34411	Inorganic Chemistry -I	25	75	100	4
2.	34412	Organic Chemistry - I	25	75	100	4
3.	34413	Physical Chemistry - I	25	75	100	4
4.	34414	Practical : Analytical Chemistry Practical	25	75	100	4
		Total	100	300	400	16
II Semester						
5.	34421	Inorganic Chemistry -II	25	75	100	4
6.	34422	Organic Chemistry - II	25	75	100	4
7.	34423	Physical Chemistry - II	25	75	100	4
8.	34424	Practical : Organic Chemistry Practical	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III Semester						
9.	34431	Advanced Inorganic Chemistry	25	75	100	4
10.	34432	Advanced Organic Chemistry	25	75	100	4
11.	34433	Spectroscopy – Applications in Organic and Inorganic Chemistry	25	75	100	4
12.	34434	Practical : Inorganic Chemistry Practical	25	75	100	4
		Total	100	300	400	16
IV Semester						
13.	34441	Analytical Chemistry	25	75	100	4
14.	34442	Applied Chemistry	25	75	100	4
15.	34443	Advanced Physical Chemistry	25	75	100	4
16.	34444	Practical : Physical Chemistry Practical	25	75	100	4
		Total	100	300	400	16
		GRAND TOTAL	400	1200	1600	64

3.

4. Detailed Syllabi:

FIRST SEMESTER

Course Code	Title of the Course
34411	INORGANIC CHEMISTRY – I

Course Objectives: The major objectives of this course are to understand the concepts of

- ✓ Chemical periodicity, structure and bonding of atoms
- ✓ Acids and basis, solid state structures and its determination
- ✓ To distinguish isopolyacids from heteropolyacids.
- ✓ To know about various types of silicates.

Learning Outcomes: The student would be able to

- ✓ Predict the shape of atoms and chemical bonding
- ✓ The apply the Bronsted and Lewis concept of acids and bases for different explanations
- ✓ Understand the structure of solids having different ratio of atoms
- ✓ Know about the chemistry of pH and Buffer solution

Block -1: Basic concepts in inorganic chemistry

Unit –1: Chemical periodicity

Chemical periodicity – ionic radii, ionization potential, electron affinity, electro negativity, concept of hybridization - Molecular orbitals and electronic configuration of homonuclear and heteronuclear diatomic molecules - Shapes of polyatomic molecules.

Unit – 2: VSEPR theory

VSEPR theory - shapes of molecules. The concept of multi centre bonding. Structure and bonding in fluorine and oxygen compounds of xenon. Bonding in simple triatomic molecules/ions.

Unit – 3: Molecular Orbital theory of covalent bonding

Bond length, bond order, bond angle, bond energy and magnetism – ionic character in a covalent bond. MO approach to covalent bonding - symmetry and overlap of atomic orbitals -symmetry of molecular orbitals - sigma-pi-and delta-bonding - energy levels in homo- and hetero nuclear diatomic molecules.

Unit – 4: Intermolecular forces and Lattice energy

Intermolecular forces -Lattice energy and its calculations by Born-lande and Born-Meyer equations- Determination by Born-Haber cycle - Kapustinski equation. Dipolemoment.

Unit – 5: Properties of ionic compounds

Properties of ionic compounds-hardness and electrical conductivity. Energetic of dissolution of ionic compounds in polar solvents.

Block -2: Acids, and Base

Unit -6: Bronsted concept of acids and bases

Bronsted concept - relative strength in aqueous medium-levelling and differentiating solvents - periodic trends in Bronsted acidity – acid strength of oxy-acids- advantages and limitations of Bronsted concept.

Unit -7: Lewis concept of acids and bases

Lewis acids and bases – relative order of acid strength of boron halides and basic strength of hydrides. Comparison between Bronsted and Lewis acids and bases

Unit -8: HSAB

Hard and Soft Acid and Bases (HSAB) principle– applications-limitations. pH and Buffer solutions.

Block -3: Polyacids and Silicates

Unit -9: Polyacids

Isopoly and heteropoly acids, and their anions, Anderson structure. Keggin structure.

Unit -10: Silicates

Types of silicates - Ortho and meta silicates, pyrosilicates, ring silicates, chain silicates, double chain silicates, sheet silicates, three dimensional silicates.

Unit -11: Silicate with frame work structures

Feldspar, zeolites - molecular sieves - clay minerals

Block -4: Solid State Chemistry

Unit -12: Crystal structure of solids

Close packing of atoms and ions –HCP, FCC and BCC types of solids- calculation of packing voids – radius ratio rule –its influence on structures. Classification of ionic structures - AX, AX₂, AX₃ types – AX type (ZnS, NaCl, CsCl) structures only - AX₂ type (fluorite, rutile, beta-cristobolite) structure only - layerstructure – CdI₂- Nickel arsenite structure.

Unit -13: Defects in crystal

Schottky and Frenkel defects -explanation and calculation of number defects per cm³ – metal excess defect - F-centers and interstitial ions - metal deficiency defect - positive ions absent - extra interstitial negative ions.

Unit -14 : Electrical properties of solids

Electrical properties of conductor, semiconductors and insulators - band theory of solids. Structure of graphite and diamond

Text books

1. **Modern aspects of Inorganic chemistry**, H.J. Emelius and Sharpe, Universal book Stall, New Delhi, 1989.
2. **Inorganic Chemistry- Principles of structure and reactivity**, J.E. Huheey, E.A. Keiter and R.L. Keiter, 4th edition, Pearson-Education, 2002.
3. **Advanced Inorganic Chemistry** - F.A. Cotton and G. Wilkinson, Wiley Eastern, 5th

edition, 1998.

4. **Inorganic Solids**, D. M. Adams, John Wiley Sons, 1974.

Reference books

1. **Inorganic Chemistry**, D. F. Shriver and P. W. Atkins, Oxford U.K., 1999.
2. **Concise Co-ordination Chemistry**, R. Gopalan, 1E 2nd reprint, VPH (P) Ltd., 2009.
3. **Inorganic Chemistry**, G. S.Sodhi; 1st Edition, VB (P) Ltd, 2006.
4. **Solid state chemistry and its applications**, A.R. West, Wiley, New York, 1984.
5. **Structural methods in Inorganic Chemistry**, E.A.V. Ebsworth, D.WH. Rankine and S. Craddock, Black well Scientific Publ., 1987.

Course Code	Title of the Course
34412	ORGANIC CHEMISTRY – I

Course Objectives: The primary objective of this course is to introduce the student to the concepts of organic chemistry and to develop critical thinking skills. The objectives are

- To learn the about the nucleophilic and electrophilic substitutions reaction
- To be able to interpret the reaction pathways
- To learn the stereochemistry of organic compounds

Learning Outcomes: The students shall be able to:

- ✓ Understand and give the IUPAC name of all organic compounds, Reaction Mechanism, Aromaticity nature of the compounds.
- ✓ Efficient knowledge in the reaction mechanism of electrophilic and Nucleophilic reaction and naming reactions.
- ✓ Create a valuable understanding of the main and important concepts in this course.

Block -1: Fundamentals of organic chemistry

Unit – 1: IUPAC nomenclature of organic compounds

Bicyclic, polycyclic and Heterocyclic compounds.

Unit – 2: Electron Displacement in molecules

Inductive and field effects – mesomeric effect – steric inhibition of resonance – steric enhancement of resonance – hyperconjugation - time variable effects - hydrogen bonding
– effect of structure on the dissociation constants of acids and bases.

Unit – 3: Aromaticity

Electron delocalization and resonance -Aromatic, antiaromatic, homoaromatic and non- aromatic compounds -Molecular orbital picture of Aromaticity- HMO theory

Unit – 4: Alternate and non-alternate hydrocarbons

Aromaticity on cyclopentadienyl anion, fulvene, ferrocene, azulene, tropolones, annulens and tropylium cations. Aromaticity on larger annulenes, hetero annulenes and fullerenes (C₆₀).

Block -2: Stereochemistry of Organic compounds

Unit – 5: Introduction to stereochemistry

Introduction to molecular symmetry and chirality – examples from common objects to molecules – axis, plane, center, alternating axis of symmetry. Stereoisomerism – definition based on symmetry and energy criteria – configuration and conformational stereoisomers.Center of chirality – molecules with C, N, S based chiral centers – absolute configuration - enantiomers – racemic modifications.

Unit – 6: Nomenclature

R and S nomenclature using Cahn-Ingold-Prelog rules – molecules with a chiral center and C_n – molecules with more than one center of chirality – definition of diastereoisomers – constitutionally symmetrical and unsymmetrical chiral molecules - erythro, threo nomenclature – E and Z nomenclature – out/in isomers.

Unit – 7: Stereochemistry and absolute configuration

Axial, planar and helical chirality – examples – stereochemistry and absolute configuration of allenes, biphenyls and binaphthyls, ansa and cyclophanic compounds, spiranes, exo-cyclic alkylidenecycloalkanes.

Block -3: Reaction mechanism and molecular rearrangement

Unit – 8: Kinetics of reaction mechanisms

Classification of organic reactions - Principle of microscopic reversibility - Hammond postulate - Kinetic and thermodynamic control of chemical reactions - Kinetic and non-kinetic methods for determining organic reaction mechanisms

Unit – 9: Carbocation

Structure and stability of carbocations, Classical and non-classical carbocations, Neighbouring group participation and rearrangements including Wagner-Meerwein, Pinacol-pinacolone, semi-pinacol rearrangement

Unit – 10: Molecular rearrangements

Mechanisms of Wagner – Meerwein, Demzonev, Wolff, Baeyer-Villiger, Stern, Beckmann and Favorskii rearrangements.

Block -4: Substitutions reaction

Unit – 11: Aliphatic nucleophilic substitutions

Nucleophiles and nucleofuge – S_N1, S_N2 and S_Ni mechanisms with examples - Factors influencing the Aliphatic nucleophilic substitutions– kinetics of Aliphatic nucleophilic substitutions– stereochemistry- competition between S_N1 and S_N2

Unit – 12: Aliphatic electrophilic substitutions

S_E1, S_E2 and S_Ei reaction and mechanism.

Unit – 13: Aromatic electrophilic substitutions

Aromatic electrophilic substitution reaction, O/P ratio, ring activator, deactivator, arenium ion mechanism, typical reaction and Mechanisms of nitration, diazonium coupling, sulphonation, halogenation, Friedel craft alkylation and acylation - Gattermann Koch formylation - Vilsmeier-Haas reaction.

Unit – 14: Aromatic Nucleophilic substitutions

Addition-elimination reaction, elimination – addition reaction and mechanism- benzyne mechanism - Von-Richter reaction.

Text books

1. **Advanced Organic Chemistry – Reactions, Mechanisms and Structure**, Jerry March, IV Edn., John Wiley & Sons, 1992.
2. **A Guide Book to Mechanisms in Organic Chemistry**, P. Sykes, VI Edn., Longmans Scientifics and Technical, Essex 1986.
3. **Reaction Mechanism in Organic Chemistry**, S.M. Mukherji and S.P. Singh, III Edn. MacMillan.1984.
4. **Organic Chemistry, Vol. I & II**, I.L. Finar, V Edn. First Indian reprint, Pearson Education Asia Pvt. Ltd. 2000.

Reference books

1. **Advanced Organic Chemistry, Part A& B**, F.A. Carey and Sundberg, III edition, Plenum Press, 1990.
2. **Organic Chemistry**, S.H. Pine, J.B. Hendrickson, D.J. Cram and G.S. Hammond, IV Edn. McGraw-Hill Company 1980.
3. **Organic Reaction Mechanisms**, V.K. Ahluwalia and R.K. Prashar, 4th edition, Alpha Science International, UK, 2011.
4. **Organic Reactions and Mechanisms**, P.S. Kalsi, II Edn., New Age International Publishers, 2000.
5. **Fundamentals of Organic Reaction Mechanisms-** J.M. Harris and C.C. Wamser, John Wiley & Sons, Inc. 1976.
6. **Organic Reaction Mechanisms-** R.K. Bansel, Tata McGraw Hill, 1975.
7. **Organic Chemistry**, P. Mehta & M. Mehta, Prentice Hall India, New Delhi, 2005.
8. **Organic Chemistry**, StevanA.Fleming, 4th ed., W.W. Norton & Compound, London, 2010.
9. **Organic Chemistry**, R.T. Morrison and R. N. Boyd's, 6th edition, Spring, 2008.
10. **Fundamentals of Reaction Mechanisms in Organic Chemistry**, R.P. Narain, PHI Learning Private Limited, New Delhi, 2011.

Course Code	Title of the Course
34413	PHYSICAL CHEMISTRY – I

Course Objectives: To make the students:

- Familiarity with basic concepts in thermodynamics and to relate the characteristics
- This unit covers the principles of chemical kinetics, theory of kinetics
- Quantum Chemistry will be applied to understanding the basic energetics of atoms and molecules.

Course Outcomes: The students shall be able to:

- ✓ Recognize the importance of quantum chemistry and of its applications.
- ✓ Describe the fundamental chemical and physical properties that determine chemical reaction rates.
- ✓ To study the solution and gas phase kinetics and some fast reaction kinetics

Block -1: Classical thermodynamics

Unit – 1: Law of thermodynamics

First and Second law of thermodynamics – Need, Statements. Entropy - Definition, entropy changes in reversible and irreversible processes, Carnot's cycle clausius inequality, entropy changes in ideal gases, entropy of mixing, entropy changes in phase changes - Degradation of energy.

Unit – 2: Gibb's and Helmholtz free energies

Gibb's and Helmholtz free energies - Criteria for spontaneity and conditions of equilibrium Maxwell relations - Thermodynamic equations of state Free energy changes in ideal gases. Gibbs Helmholtz equation, applications.

Unit – 3: Nernst Heat theorem

Nernst Heat theorem - Third law of thermodynamics, apparent exceptions to third law - Partial molar quantities - chemical potential Gibb's Duhem equation - Duhem Margules equation - determination of partial molar quantities. Zeroth law of thermodynamics.

Unit – 4: Fugacity

Fugacity and its determination - Activity and activity co-efficient - determination of mean activity co-efficient of electrolytes - Reaction isotherm - equilibrium constant and its dependence on temperature and pressure.

Block -2: Electrochemistry

Unit – 5: Transport number

Transport number and ionic mobilities (only definition and not determination) - Debye Huckel theory of interionic attraction.

Unit – 6: Debye Huckel Onsagar equation

Debye Huckel Onsagar equation - Validity and extension of the theory - Activity of ions in solution - Debye Huckel limiting law

Unit – 7: Applications of conductivity measurements

Applications of conductivity measurements - Electrode potential and Nernst equation - types of electrodes and electrochemical cells.

Unit – 8: EMF

EMF Applications of cell EMF - Electrode Kinetics over voltage and its determination - Butler-Volmer equation and approximation of the equation.

Block -3: Quantum Chemistry**Unit – 9: Fundamental of quantum chemistry**

Inadequacy of classical mechanics, Black body radiation, and photoelectric effect-wave- particle dualism - Heisenberg's uncertainty principle.

Unit – 10: Mathematical preparation for quantum chemistry

Mathematical preparation for quantum chemistry: functions, operators, matrices, vectors
– Eigen value and Eigen functions.

Unit – 11: Postulates of quantum mechanics

Postulates of quantum mechanics-Schrodinger wave equation - Application of quantum chemistry to particle in one and three dimensional boxes – degeneracy.

Block -4: Chemical Kinetics**Unit – 12: Theories of reaction rates**

Theories of reaction rates: Absolute reaction rate theory (ARRT) - thermodynamic and statistical treatment - comparison to simple collision theory - Application of ARRT to unimolecular (Lindemann, Hinshelwood and KRRM and Slater) bimolecular and third order reactions

Unit – 13: Isotopic effect

Potential energy surfaces, Kinetic isotopic effect (qualitative approach only) - Principles of microscopic reversibility - steady state approximation –

Unit – 14: Kinetics of complex reactions

Parallel consecutive and opposing or reversible reactions, Branched chain and explosive reactions - Fast reactions - Flow, relaxation and NMR methods.

Text Books

1. **Thermodynamics for Students of Chemistry**, J. Rajaram and J.C. Kuriacose, Lal Nagin Chand, New Delhi, 1986.
2. **Physical Chemistry**, P.W. Atkins, Oxford University Press, Oxford, 1990.

3. **Text Book of Physical Chemistry**, D.A. McQuarrie, University Science Books, Mill Valley, California, 1983.
4. **Quantum Chemistry**, Henry Eyring, John Walter, George E. Kimball, BiblioBazaar, California, 2011.
5. **Chemical Kinetics**, Farrington Daniels, BiblioBazaar, Cornell University Press LONDON, 2011.
6. **Kinetics and Mechanism of Chemical Transformations**, J. Rajaram and J.C. Kuriacose, MacMillan India Ltd. 1993.

Reference Books

1. **Molecular Quantum Mechanics**, P.W. Atkins, Oxford University Press, Oxford, 1983.
2. **Quantum Mechanics in Chemistry**, M.W. Hanna, W.A. Benjamin Inc. London 1965
3. **Thermodynamics for Chemists**, S. Glasstone, Affiliated East West Press, New Delhi 1960.
4. **Chemical Kinetics**, K.J. Laidler, 3rd ed., Pearson Education Inc, New Delhi, 2008.
5. **Kinetics and Mechanism**, R.G. Frost and Pearson, Wiley New York, 1961.
6. **Quantum Chemistry**, R.K. Prasad, Wiley Eastern, New Delhi, 1992.
7. **Thermodynamics**, Enrico Fermi, Create Space, Dover Publications USA, 2011.

Course Code	Title of the Course
34414	ANALYTICAL CHEMISTRY PRACTICAL

Course Objectives

- To understand the principle behind the estimation of organic compounds and get practical knowledge.
- To improve the skill in semi-micro qualitative analysis of inorganic mixtures containing two less familiar cations and two familiar cations.

Learning Outcomes: Students will get the experience in the

- ✓ Estimation of various organic compounds
- ✓ Semi-micro qualitative analysis of cations.

This will make the students to work well in the research institutes and quality control laboratories.

Block -1: Quantitative Estimation -1

Unit 1: Quantitative estimation of aniline

Estimate the amount of aniline present in the whole of the given solution.

Unit 2: Quantitative estimation of phenol

Estimate the amount of phenol present in the whole of the given solution

Unit 3: Quantitative estimation of ethylmethylketone

Estimate the amount of ethylmethylketone present in the whole of the given solution

Unit 4: Quantitative estimation of glucose

Estimate the amount of glucose present in the whole of the given solution

Block -2: Semi-micro qualitative analysis -1

: Unit 5: Semi-micro qualitative analysis of mixture -1

Analysis of mixtures containing two less familiar cations like W, Tl, Mo, Se, Te, Ce, Zr, Th, Ti, V, U and Li and two familiar cations like Pb, Cu, Bi, Cd, Mn, Ni, Co, Zn, Ca, Ba, Sr and Mg.

Unit 6: Semi-micro qualitative analysis of mixture -2

Analysis of mixtures containing two less familiar cations like W, Tl, Mo, Se, Te, Ce, Zr, Th, Ti, V, U and Li and two familiar cations like Pb, Cu, Bi, Cd, Mn, Ni, Co, Zn, Ca, Ba, Sr and Mg.

Unit 7: Semi-micro qualitative analysis of mixture -3

Analysis of mixtures containing two less familiar cations like W, Tl, Mo, Se, Te, Ce, Zr, Th, Ti, V, U and Li and two familiar cations like Pb, Cu, Bi, Cd, Mn, Ni, Co, Zn, Ca, Ba, Sr and Mg.

Block -3: Semi-micro qualitative analysis -2

Unit 8: Semi-micro qualitative analysis of mixture -4

Analysis of mixtures containing two less familiar cations like W, Tl, Mo, Se, Te, Ce, Zr, Th, Ti, V, U and Li and two familiar cations like Pb, Cu, Bi, Cd, Mn, Ni, Co, Zn, Ca, Ba, Sr and Mg.

Unit 9: Semi-micro qualitative analysis of mixture -5

Analysis of mixtures containing two less familiar cations like W, Tl, Mo, Se, Te, Ce, Zr, Th, Ti, V, U and Li and two familiar cations like Pb, Cu, Bi, Cd, Mn, Ni, Co, Zn, Ca, Ba, Sr and Mg.

Unit 10: Semi-micro qualitative analysis of mixture -6

Analysis of mixtures containing two less familiar cations like W, Tl, Mo, Se, Te, Ce, Zr, Th, Ti, V, U and Li and two familiar cations like Pb, Cu, Bi, Cd, Mn, Ni, Co, Zn, Ca, Ba, Sr and Mg.

Block -4: Semi-micro qualitative analysis -3

Unit 11: Semi-micro qualitative analysis of mixture -7

Analysis of mixtures containing two less familiar cations like W, Tl, Mo, Se, Te, Ce, Zr, Th, Ti, V, U and Li and two familiar cations like Pb, Cu, Bi, Cd, Mn, Ni, Co, Zn, Ca, Ba, Sr and Mg.

Unit 12: Semi-micro qualitative analysis of mixture -8

Analysis of mixtures containing two less familiar cations like W, Tl, Mo, Se, Te, Ce, Zr, Th, Ti, V, U and Li and two familiar cations like Pb, Cu, Bi, Cd, Mn, Ni, Co, Zn, Ca, Ba, Sr and Mg.

Unit 13: Semi-micro qualitative analysis of mixture -9

Analysis of mixtures containing two less familiar cations like W, Tl, Mo, Se, Te, Ce, Zr, Th, Ti, V, U and Li and two familiar cations like Pb, Cu, Bi, Cd, Mn, Ni, Co, Zn, Ca, Ba, Sr and Mg.

Unit 14: Semi-micro qualitative analysis of mixture -10

Analysis of mixtures containing two less familiar cations like W, Tl, Mo, Se, Te, Ce, Zr, Th, Ti, V, U and Li and two familiar cations like Pb, Cu, Bi, Cd, Mn, Ni, Co, Zn, Ca, Ba, Sr and Mg.

Reference Books

1. **A Laboratory Manual of Inorganic Chemistry**, John Bernard Ekeley, BiblioLife, 2010.
2. **Laboratory Manual of Organic Chemistry**, Raj K. Bansal, III Edition, New Age International (P) Ltd., 1996.
3. **Vogel's qualitative Inorganic analysis**, G. Svehla, VI Edition, Orient Longman, 1987.
4. **Inorganic Semimicro Qualitative analysis**, V.V. Ramanujam, National Publishing Co., 1971.

SECOND SEMESTER

Course Code	Title of the Course
34421	INORGANIC CHEMISTRY – II

Course Objectives: The objectives are to understand the concepts of

- The Nomenclature of coordination compounds
- The formation of coordination compounds by CFT and MOT
- Nuclear structure and nuclear reactions
- Extraction of lanthanides, spectral and magnetic properties of lanthanides and actinides.

Learning outcomes: The students will have knowledge in

- ✓ The formation of coordination complexes based on the various theories
- ✓ Magnetic properties of coordination complexes
- ✓ Basic mechanism of nuclear reactions and nuclear reactor
- ✓ Uses of lanthanide and actinides

Block -1: Coordination chemistry

Unit- 1: Fundamentals of coordination chemistry

Nomenclature of coordination compounds, Geometrical and optical isomerisms in octahedral, square planar and tetrahedral complexes. Theory on coordination compounds
– valence bond theory, limitation of VBT

Unit-2: Crystal field Theory in octahedral and tetrahedral complexes

CFT – Splitting in octahedral field – CFSE - Strong field and weak field splitting- calculation of CFSE for d^n systems - splitting in tetrahedral complexes - only weak field splitting – reason, spectrochemical series.

Unit-3: Crystal field Theory in tetragonal and square planar complexes

Tetragonal symmetry - differences between tetrahedral and tetragonal symmetries - Jahn- Teller distortion - theorem - square planar symmetry - factors affecting $10Dq$ - Jorgensen relation - evidences for CFSE.

Unit-4: Molecular orbital theory of Coordination complexes

MOT - Octahedral, tetrahedral, square planar complexes- π bonding and MOT ligands having empty and filled π orbitals – effect on $10Dq$, comparison of VBT and CFT

Unit-5: Magnetic properties of complexes.

Para, dia, ferro, ferri, antiferro magnetisms - calculation of μ_{eff} values for complexes.

Block -2: Nuclear Chemistry

Unit -6: Basics of nuclear structure

Nuclear structure - composition of nuclei,– nuclear forces-its characteristics - meson field theory nuclear models - liquid drop, shell and collective models- Properties of nucleus.

Unit -7: Nuclear stability

Nuclear stability, factors affecting the nuclear stability; Mode of decay - alpha, beta, gamma and orbital electron capture; Q value - threshold energy- reaction

cross section; isobars- nuclear isomerism

Unit -8 : Radioactive decay and detection

Radioactive decay - theories of decay processes – Laws of radioactivity, series of radioactivity. Detection and measurements of radiations –Half life period, Geiger Muller counter, Scintillation counters.

Block -3: Artificial radioactivity

Unit -9: Classification of nuclear reactions and Artificial radioactivity

Nuclear reactions - transmutation, stripping and pick up, fission, fusion, spallation and fragmentation reactions - nuclear cross-section.

Unit -10: Particle accelerators

Charged particle accelerators, Cyclotron and synchrotron, Uses of accelerator.

Unit -11: Application of nuclear Chemistry

Application C^{14} dating – agriculture - biology – neutron activation and isotopic dilution analysis.

Block -4: Lanthanides and Actinides

Unit -12: Position of Lanthanides and Actinides

Lanthanides and Actinides -position in the periodic table, electronic configuration and oxidation states

Unit -13: Lanthanides and Actinides - occurrence, extraction and separation techniques

Lanthanides - occurrence, extraction and separation techniques -fractional crystallization, precipitation, ion exchange, solvent extraction and thermal decomposition, selective reduction and oxidation

Unit -14: Properties and uses of lanthanides and Actinides

Lanthanides and Actinides contraction – Causes of Lanthanides contraction - spectral and magnetic properties - coordination compounds of lanthanides. Comparative account of

lanthanides and actinides, Uses of lanthanides and Actinides and their compounds

Text books

1. **Advanced Inorganic Chemistry**, F.A. Cotton and G. Wilkinson, Wiley Eastern (P) Ltd., 1988.
2. **Essentials of nuclear chemistry**, H.J. Arniker, 2nd edition Wiley eastern Co., 1987.
3. **Concise Inorganic Chemistry**, J.D. Lee, Fifth edition Oxford, 2008.

Reference books

1. **Co-ordination Chemistry**, D. Bannerjea, Tata-McGraw Hill, 1993.
2. **Inorganic Chemistry- Principles of structure and reactivity**, J.E. Huheey, E.A. Keiter and R.L. Keiter, 4th edition, Pearson-Education, 2002.
3. **The Magneto Chemistry of Complex Compounds** in Modern Coordination Chemistry, B. N. Figgies and J. Lewis, Ed: Lewis & Wilkins, Interscience. N.Y., 1967.
4. **Nuclear and radiochemistry**, G. Friedlander, J.W. Kennedy and J.M. Miller, Wiley, 1964.
5. **Elements of Nuclear Chemistry**, A.K. Srivatsava and P.C. Jain, S. Chand and Co., 1989.

Course Code	Title of the Course
34422	ORGANIC CHEMISTRY – II

Course Objectives: To make the students:

- To understand on the basic concepts on how an organic compound undergoes photochemical or pericyclic reactions.
- Emphasis the stereoisomerism of organic compound
- Emphasis is on the construction of organic compounds through the reactive intermediates.
- To understand the elimination and addition reaction.

Course Outcomes: The students shall be able to:

- ✓ Increase in ability of isomerism and stereochemistry of organic compounds
- ✓ Understand the importance of photochemistry and pericyclic reaction.
- ✓ Recognize the mechanism of addition and elimination reaction
- ✓ Recognize the mechanism of oxidation and reduction reactions in organic synthesis.

Block -1: Elimination and Addition reaction

Unit – 1: Elimination reactions

E_1 , E_2 and E_{1cB} mechanisms - orientation of the double bond - effect of substrate, base, leaving group and reaction medium

Unit – 2: Rules of Elimination reactions

Hofmann and Saytzeff rules - elimination versus substitution - pyrolytic cis elimination - Bredt's rule.

Unit – 3: Addition reaction

Electrophilic, Nucleophilic and free radical additions - stereochemistry of additions - addition to conjugated systems - regioselectivity and chemoselectivity in additions

Block -2: Addition to multiple bond and Conformational analysis

Unit – 4: Addition to carbon-carbon multiple bond

Hydration of olefins – hydroboration - Michael addition - and lithium dimethyl Cuprate - Diels-Alder reaction.

Unit – 5: Addition to carbon-hetero multiple bond

Mechanisms of Aldol condensation, Perkin reaction, Knoevenagel reaction, Mannich reaction, Claisen ester condensation, Dieckmann condensation, Darzen reaction. Wittig reaction, Cannizzaro reaction, Benzoin condensation and Reformatsky reaction-Addition of Grignard reagents

Unit-6: Conformational analysis of acyclic and cyclic systems

Conformational analysis of acyclic and cyclic systems – substituted n-butanes – cyclohexane and its derivatives – decalins – fused and bridged bicyclic systems – conformation and reactivity some examples

Unit – 7: Topicity and NMR distinction of organic compounds

Topicity and prostereoisomerism – topicity of ligands and faces, and their nomenclature – NMR distinction of enantiotopic/diastereotopic ligands.

Block -3: Reaction intermediates

Unit – 8: Carbenes

Structure of carbenes, generation of carbenes, addition and insertion reactions, rearrangement reactions of carbenes - Wolff rearrangement.

Unit – 9: Nitrenes

Structure of nitrene, generation and reactions of nitrene and related electron deficient nitrogen intermediates, Curtius, Hoffmann, Schmidt, Beckmann rearrangement reactions.

Unit – 10: Free radical reactions

Formation, detection, stability and reactions of free radicals – radicals chain reactions - polymerization, substitution, additions and rearrangements – Barton, Gomberg, Sandmeyer, Ullmann, Pschorr and Hunsdiecker reactions.

Block -4: Photochemistry

Unit – 11: Fundamentals of Photochemistry

Principles - excited states - Energy transfers - Jablonski diagram - sensitization, quenching and quantum efficiency

Unit – 12: Photochemical reaction

Norrish type I and type II reactions – Paterno-Buchi reaction – photoreduction – photooxidation - photochemical reactions of olefins - cis-trans isomerisation - di- π methane rearrangement.

Unit – 13: Pericyclic reactions

Woodward-Hoffmann rules - Frontier molecular orbital theory - perturbation theory - electrocyclic reactions - cycloaddition reactions

Unit – 14: chemotropic reaction

Sigmatropic rearrangements. Cope and Claisen rearrangements; 1,3-dipolar additions - Diels - Alder reaction.

Text books

1. **Advanced Organic Chemistry – Reactions, Mechanisms and Structure**, Jerry March, IV Edn., John Wiley & Sons, 1992.
2. **A Guide Book to Mechanisms in Organic Chemistry**, P. Sykes, VI Edn., Longmans Scientifics and Technical, Essex 1986.
3. **Reaction Mechanism in Organic Chemistry**, S.M. Mukherji and S.P. Singh, III Edn. MacMillan.1984.
4. **Stereochemistry of carbon compounds**, Ernest L. Eliel, T.M.H. Edn., Tata McGraw-Hill Publishing Company, 1962.
5. **Organic Photochemistry**, J.M.Coxon and B. Halton, Cambridge University Press, 2011.
6. **Molecular Rearrangements, Vol.I, Vol. II**, Paul de Mayo, Interscience, NY, 1963.

Reference books

1. **Advanced Organic Chemistry, Part A& B**, F.A. Carey and Sundberg, III edition, Plenum Press, 1990.
2. **Organic Chemistry**, S.H. Pine, J.B. Hendrickson, D.J. Cram and G.S. Hammond, IV Edn. McGraw-Hill Company 1980.
3. **Organic Reaction Mechanisms**, V.K. Ahluwalia and R.K. Prashar, 4th edition, Alpha Science International, UK, 2011.
4. **Organic Reactions and Mechanisms**, P.S. Kalsi, II Edn., New Age International Publishers, 2000.
5. **Organic Reaction Mechanisms-** R.K. Bansel, Tata McGraw Hill, 1975.
6. **Organic Chemistry**, R.T. Morrison and R. N. Boyd's, 6th edition, Spring, 2008.
7. **Fundamentals of Reaction Mechanisms in Organic Chemistry**, R.P. Narain, PHI Learning Private Limited, New Delhi, 2011.

Course Code	Title of the Course
34423	PHYSICAL CHEMISTRY – II

Course Objectives: To make the students

- To study adsorption isotherm for adsorption on to solid surfaces and to understand heterogeneous catalysis.
- To acquire basic knowledge in area of Fundamental concepts of polymer chemistry, Polymerization reactions Polymerization techniques
- To know about photochemistry and radiation chemistry

Learning Outcomes: After completion of the course, the students shall be able to

- ✓ Get deep knowledge about various methods of polymerization and speciality polymers
- ✓ Get knowledge about nomenclature of polymer, degree, types, mechanism and kinetics of polymerization and Characterization of polymers
- ✓ To describe adsorption isotherm for adsorption on to solid surfaces and to understand heterogeneous catalysis

Block -1: Surface Chemistry

Unit – 1: Adsorption of gases

Adsorption of gases on solids - Physical and Chemical adsorption – Freundlich, Langmuir, Temkin and BET isotherms

Unit – 2: Surface area reaction

Surface area determination - Mechanisms of uni and bimolecular surface reactions - Langmuir-Hinshelwood and Langmuir-Riedal mechanisms

Unit – 3: Surface excess

Surface excess - Gibbs adsorption isotherm - spreading of a liquid on another - contact angle – surfactants - micelles and detergents.

Block -2: Photochemistry and radiation chemistry

Unit – 4: photophysical processes

Absorption of light by atoms and molecules - photophysical processes of the electronically excited states - fluorescence and phosphorescence

Unit – 5: Energy transfer mechanisms

Energy transfer mechanisms - photosensitization and Chemiluminescence - actinometers and quantum yield determination

Unit – 6: Flash photolysis

Flash photolysis. Study of photochemical reactions - Hydrogen-Halogen reaction - decomposition of carbonyl compounds

Unit – 7: Radiation chemistry

Radiation chemistry of aqueous solutions-hydrated electron - radiolysis of water – Pulsed radiolysis.

Block -3: Polymer chemistry

Unit – 8: Fundamentals of Polymer

Definition, classification of polymers- addition polymerization – type of initiators – initiator efficiency

Unit – 9: Stepwise polymerization

Stepwise polymerization – Functionality of monomers and its significance – Molar masses - Degree of polymerization

Unit – 10: Kinetics and Mechanism polymerization

Kinetics and Mechanism of free radical, cationic and anionic polymerization.

Unit – 11: Polymerization techniques

Various methods of polymerization – solution, bulk, emulsion and suspension polymerization.

Block -4: Colloids and solar energy

Unit – 12: Colloids

Definition, classification, Stability and properties of colloids.

Unit – 13: Solar energy conversion

Conducting polymers, polymer electrolyte, fire retardant, thermally stable and bio- degradable polymers. Atom radical polymerization- Basic, mechanism and applicaiton. Dendrimer.

Unit -14: Solar energy conversion

Principle, solar panel, photovoltaic cell – dye sensitized solar cell, solar water splitting, artificial photosynthesis, water oxidation and hydrogen evolution reaction.

Text Books

1. **Fundamentals of Photochemistry**, K.K. Rohatgi-Mukherjee, New Age International (P) Ltd, Publishers, New Delhi, 2008.
2. **Physical Chemistry**, P.W. Atkins, Oxford University Press, Oxford, 1990.
3. **Physical Chemistry of surfaces**, A.W.Adamson, 4th edn., Wiley - Interscience, Newyork, 1982.
4. **Text Book of Polymer Science**, F.W.Billmeyer Jr. 3rd edn., John Wiley & Sons, New York, 2003.
5. **A Textbook of Polymers**, . M.S. Bhatnagar, Vol I, S.Chand & Company Ltd., 2004.

Reference Books

1. **Physical Chemistry of Surfaces**, A.W. Anderson, Wiley-Interscience, Newyork, 1990.
2. **Physical Chemistry**, Paul Monk, John Wiley and Sons Limited, England, 2004.
3. **Polymer Science**, V.R. Gowariker, N.V. Viswanathan and J. Sreedhar, New Age International, New Delhi, 2003.
4. **Contemporary Polymer Chemistry**, H.R. Alcock and F.W. Lamber, Prentice Hall,1981.
5. **Principles of polymer chemistry**, P.J. Flory, Cornell University press, New York, 1953.

Course Code	Title of the Course
34424	ORGANIC CHEMISTRY PRACTICAL

Course Objectives

The objectives of this course are to:

- Develop practical skill with reference to organic qualitative analysis and organic preparations
- Have expertise in the chromatographic separations
- Understand how to solve the structure of organic compounds using spectroscopies
-

Learning Outcomes

The student would have through practical knowledge in the

- ✓ Separation of organic mixture and identification of organic compounds
- ✓ Chromatographic separations
- ✓ Confirmation of structure of organic compounds using spectroscopes

Block -1. Qualitative analysis: Separation and Identification of components in a two component mixture and preparation of their derivatives. Determinations of boiling point/melting point for components and melting point for their derivatives.

Unit 1: Analysis of two-component mixtures

Separation and characterization of components -1

Unit 2: Analysis of two-component mixtures

Separation and characterization of components -2

Unit 3: Analysis of two-component mixtures

Separation and characterization of components – 3

Block -2. Qualitative analysis

Unit 4: Analysis of two-component mixtures

Separation and characterization of components – 4

Unit 5: Analysis of two-component mixtures

Separation and characterization of components -5

Unit 6: Analysis of two-component mixtures

Separation and characterization of components -5

Block -3. About a dozen single stage preparation of organic compounds-1

Unit 7: single stage preparation of organic compounds

Preparations of organic compounds illustrating N-acylation

Unit 8: Single stage preparation of organic compounds

Preparations of organic compounds illustrating O-acylation

Unit 9: Single stage preparation of organic compounds

Preparations of organic compounds illustrating bromination

Unit 10: Single stage preparation of organic compounds

Preparations of organic compounds illustrating nitration

Block -4. About a dozen single stage preparation of organic compounds -2

Unit 11: Single stage preparation of organic compounds

Preparations of organic compounds illustrating benzoylation

Unit 12: Single stage preparation of organic compounds

Preparations of organic compounds illustrating diazotization

Unit 13: Single stage preparation of organic compounds

Preparations of organic compounds illustrating rearrangements

Unit 14: Single stage preparation of organic compounds

Preparations of organic compounds illustrating hydrolysis

Reference books

Laboratory Manual of Organic Chemistry, **Raj K. Bansal, III Edition, New Age International (P) Ltd.1996.**

- 1. Elementary practical organic chemistry: Quantitative organic analysis Part-III, 2e(pb),**
A.I.Vogel, Pearson Education Asia, 2011
- 2. Elementary practical organic chemistry: Qualitative organic analysis Part-II, 2e(pb),**
A.I.Vogel, Pearson Education Asia, 2011

THIRD SEMESTER

Course Code	Title of the Course	
34431	ADVANCED CHEMISTRY	INORGANIC

Course Objectives: To make the students:

- To know synthetic procedure of metal alkyl, alkene, alkyne, and arene complexes
- To describe the various organometallic reaction mechanisms
- To appreciate the uses of organometallic complexes
- To predict their structures and bonding found in inorganic rings
- To distinguish substitution reactions in octahedral and square planar complexes
- To understand spectral and magnetic properties of octahedral complexes
- Distribution of metal ions in bioligands
- Role of metals in medicine and their structure and properties.

Learning Outcomes: After completion of the course the student are able to:

- ✓ Predict the reaction mechanisms of organometallic complexes and catalysis They will have expertise in
- ✓ Know the electron transitions in complexes and its effect on magnetic properties
- ✓ Understand the chemistry of cages and clusters

Block -1: Coordination Chemistry

Unit-1: Stability of coordination compounds

Stability constants, stepwise and overall formation constants - pH metric, polarographic and Spectrophotometric methods of determining stability constants - chelate effect.

Unit-2: Kinetics and mechanisms of coordination compounds

Kinetics and mechanisms of reactions in solution - labile and inert complexes - ligand displacement reactions - hydrolysis, anation, aquation in octahedral complexes - substitution reactions in square planar complexes – trans effect – electron transfer reactions

Unit-3: complementary and non-complementary reactions

Inner sphere and outer sphere processes – isomerisation and racemisation - template effect and synthesis of macrocyclic ligands.

Block -2: Spectral properties of complexes, Spinels, Cages, clusters and boranes

Unit -4 : Spectral properties of complexes

Electronic spectra of coordination compounds - selection rules, band intensities and band widths; Term state for d ions in Octahedral complexes, energy level diagrams of Orgel and Tanabe - Sugano diagram.

Unit -5 : Spinels

Spinels – normal and inverse types, site preferences in spinels and perovskite structures.

Unit -6: Cages and metal clusters

Inorganic chains - rings – cages, Metal clusters - dinuclear clusters - trinuclear clusters - tetranuclear clusters - hexanuclear cluster.

Unit -7: Boranes

Boranes: Structure and bonding in polyhedral boranes and carboranes, styx notation; Wade's rule; electron count in polyhedral boranes; isolobal analogy.

Block -3: Organometallic chemistry

Unit-8: Definition of Organometallics

M-C – bond - Low oxidation state of metal – explanation – synthesis and structure of metal alkyls and aryls - Olefin and acetylene complexes - Dewar-Chatt approach to bonding in olefins

Unit-9: Metallocenes

Metallocenes – structure — comparison of ferrocene with other metallocenes with respect to their reactivity, stability etc – preparation of ferrocene – properties - fluxional molecules.

Unit-10: Metal carbonyl

Metal carbonyl complexes - synthesis - structure and reactions of metal carbonyls - metal carbonyl anions - metal carbonyl hydrides - metal carbonyl halides - metal carbonyl clusters - metal nitrosyls.

Unit -11: Catalysis involving organometallics

Oxidative addition and reductive elimination, hydrogenation, hydroformylation, Monsanto process, isomerisation and Ziegler-Natta polymerization.

Block -4: Bioinorganic chemistry

Unit-12: Metalloporphyrins and Metalloenzymes

Chlorophyll-hemoglobin and myoglobin structure and function of hemoglobin - cytochromes, enzyme action-inhibition and restoration. Carboxy peptidase-A, Vitamin B₁₂ and B₁₂ coenzymes. Copper containing oxidases

Unit-13: non-heme iron proteins

Rubridoxin – ferredoxins – HIPIP, fixation of nitrogen - in vivo systems

Unit-14: Metal ions in biology

Alkali and alkaline earth metal ions in biology - sodium ion pump. Metal poisons and chelating agents in medicine.

Text books

- 1. Modern aspects of Inorganic chemistry**, H.J. Emelius and Sharpe, Universal book Stall, New Delhi, 1989.
- 2. Inorganic Chemistry- Principles of structure and reactivity**, J.E. Huheey, E.A. Keiter and R.L. Keiter, 4th edition, Pearson-Education, 2002.
- 3. Advanced Inorganic Chemistry** - F.A. Cotton and G. Wilkinson, Wiley Eastern, 5th edition, 1998.
- 4. Modern aspects of Inorganic chemistry**, H.J. Emelius and Sharpe, Universal book Stall, New Delhi, 1989.

5. Inorganic Chemistry- Principles of structure and reactivity, J.E. Huheey, E.A. Keiter and R.L. Keiter, 4th edition, Pearson-Education, 2002.

6. Advanced Inorganic Chemistry - F.A. Cotton and G. Wilkinson, Wiley Eastern, 5th edition, 1998.

Reference books

1. **Inorganic Chemistry**, D. F. Shriver and P. W. Atkins, Oxford U.K., 1999.
2. **Physical Methods in Inorganic Chemistry**, R. S. Drago, Van Nostrand Reinhold, 2nd Edn., 1968.
3. **Chemistry & Chemical Reactivity**, John C. Kotz, Paul M. Treichel, John Townsend, 8th ed. Cengage Learning, USA, 2012.
4. **A Text book of Quantitative Inorganic Analysis**, A. I. Vogel, ELBS, 3rd Edn, 1969.
5. **Source book of atomic Energy**, S. Glasstone, Van Nonstrand Co., 1969.
6. **Inorganic Chemistry**,. G. S.Sodhi; 1st Edition, VB (P) Ltd, 2006.

Course Code	Title of the Course
34432	ADVANCED ORGANIC CHEMISTRY

Course Objectives: To make the students:

- To learn the about the oxidizing and reducing reagents in organic synthesis
- Emphasis is on the construction of organic compounds through the reactive intermediates.
- To understand the importance and structural characterization of nucleic acid, vitamins, carbohydrate
- Able to synthesis the alkaloids and terpenes
- To understand the importance of target molecules and their synthesis.

Learning Outcomes: The students shall be able to:

- ✓ Create a valuable understanding of the main and important concepts in this course.
- ✓ Understand how systematic the advanced organic syntheses are carried out.
- ✓ Know about the importance and usefulness of protecting groups in organic synthesis.
- ✓ primarily with the principles to understand the oxidation and reduction reaction

Block -1: Oxidation and reduction

Unit-1: Oxidizing reagents in organic synthesis -1

Metal based and non-metal based oxidations of (i) alcohols to carbonyls (Cr, Mn, hypervalent iodine and TEMPO based reagents). (ii) phenols (Fremy's salt, silver carbonate) (iii) alkenes to epoxides (peroxides/per acids based), Sharpless asymmetric epoxidation,

Unit-2: Oxidizing reagents in organic synthesis -2

(i) alkenes to diols (Mn, Os based), Sharpless asymmetric dihydroxylation, Prevost reaction and Woodward modification, (ii) alkenes to carbonyls with bond cleavage (Os and Ru, ozonolysis) (iii) alkenes to alcohols/carbonyls without bond cleavage (hydroboration-oxidation, Wacker oxidation, Se) (iv) ketones to ester/lactones (Baeyer-Villiger).

Unit-3: Reducing reagents in organic synthesis -1

Catalytic hydrogenation- Heterogeneous: Pd/Pt/Rh/Ni, Homogeneous, Wilkinson, Li/Na/Ca in liquid ammonia - Birch, Pinacol formation, McMurry, Acyloin formation, dehalogenation and deoxygenations,

Unit-4: Reducing reagents in organic synthesis -2

Hydride transfer reagents from Group III and Group IV in reductions – LiBH₄, NaBH₄, triacetoxyborohydride, L-selectride, K-selectride, Luche reduction; LiAlH₄, DIBAL-H; Trialkylsilanes, Meerwein-Ponndorf-Verley reduction - Stereo/enantioselectivity reductions -Chiral Boranes, Corey-Bakshi-Shibata

Block -2: Retrosynthetic Analysis and Heterocyclic compounds

Unit-5: Retrosynthetic Analysis

Basic principles and terminology of retrosynthesis, synthesis of aromatic compounds, one group and two group C-X disconnections, one group C-C and two group C-C

disconnections, amine and alkene synthesis, important strategies of retrosynthesis, functional group transposition, important functional group interconversions

Unit-6: Functional group protection

Protection and deprotection of hydroxy, carboxyl, carbonyl, carboxy amino groups and carbon-carbon multiple bonds; chemo- and regioselective protection and deprotection; illustration of protection and deprotection in synthesis

Unit – 7: Heterocyclic compounds

Synthesis, structure and reactivity of Indole, Oxazole, Flavone and Anthocyanin.

Block -3: Carbohydrates, Protein and Ezzymes

Unit – 8: Carbohydrates

Configuration and conformation of disaccharides - Maltose and cellobiose – Polysaccharides - starch and cellulose.

Unit – 9: Proteins and enzyme

Aspects of structure and classification of proteins.- Primary, secondary and tertiary structure- end group analysis -Solid phase peptide synthesis. Enzyme- coenzyme.

Unit – 10:Nucleic acids

Aspects of structure and classification DNA and RNA. DNA replication and RNA transcription and translation

Block -4: Natural products

Unit – 11: Alkaloids

Structure and synthesis of Morphine and Atropine, Biosynthesis of Alkaloids.

Unit –12: Terpenes

Structure and synthesis of α -Pinene, Camphor and Zingiberene. Biosynthesis of terpenes.

Unit – 13: Vitamins

Chemistry and physiological action of ascorbic acid, thiamin, riboflavin and pyridoxine – Elementary aspect of vitamin A, E, K and B12.

Unit – 14:Cholesterol and steroid

Structural elucidation of cholesterol– biosynthesis of Cholesterol. Structural elucidation and synthesis of Progesterone.

Text books

1. **Advanced Organic Chemistry – Reactions, Mechanisms and Structure**, Jerry March, IV Edn., John Wiley & Sons, 1992.
2. **A Guide Book to Mechanisms in Organic Chemistry**, P. Sykes, VI Edn., Longmans Scientifics and Technical, Essex 1986.
3. **Reaction Mechanism in Organic Chemistry**, S.M. Mukherji and S.P. Singh, III Edn. MacMillan.1984.
4. **Organic Chemistry, Vol. I & II**, I.L. Finar, V Edn. First Indian reprint, Pearson Education Asia Pvt. Ltd. 2000.

Reference books

1. **Organic Reaction Mechanisms**- R.K. Bansel, Tata McGraw Hill, 1975.
2. **Chemistry of Alkaloids**, S.W. Pelletier, Van Nostrand Reinhold, 1970.
3. **Chemistry of Terpenes and Terpenoids**, A.A. Newman (editor), Academic Press, London, 1972.
4. **Organic Chemistry**, P. Mehta & M. Mehta, Prentice Hall India, New Delhi, 2005.
5. **Chemistry of Terpenoids**, P. De Mayo, Interscience publishers, 1959.
6. **Biochemistry**, A.L. Lehninger, Nath publishers, 2000.
7. **Organic Chemistry**, Stevan A. Fleming, 4th ed., W.W. Norton & Company, London, 2010.
8. **Organic Chemistry**, R.T. Morrison and R. N. Boyd's, 6th edition, Spring, 2008.
9. **March's Advanced Organic Chemistry Reactions, Mechanisms and Structure**, Michael B. Smith and Jerry March, 6th edition, John Wiley & Sons Inc., New Jersey, 2007.
10. **Fundamentals of Reaction Mechanisms in Organic Chemistry**, R.P. Narain, PHI Learning Private Limited, New Delhi, 2011.

Course Code	Title of the Course
34433	Spectroscopy – Applications in Organic and Inorganic Chemistry

Course Objectives

The primary objective of this course is to introduce the student to the advanced concepts of applications of spectroscopy in organic and inorganic chemistry. The objectives are:

- To learn the about the theory and applications of UV-VIS, and FT IR spectroscopies
- To be familiar with the principles and applications of NMR, ESR, and Mass spectroscopies
- To be able to interpret the spectra and work out conjoined problems in spectroscopies.

Learning Outcomes

Students will be able to

- ✓ Understand how different spectroscopes work and their applications in structure elucidations.
- ✓ Recognize and distinguish the different molecules by applying the spectroscopies
- ✓ Solve spectral problems
- ✓ Know about the importance and usefulness of various spectroscopies in organic and inorganic chemistry.

Block -1: UV-Visible and IR spectroscopy

Unit 1: UV-Visible spectroscopy

Basic Principles – electronic excitations-solvent effects - factors affecting position and intensity of absorption bands - instrumentation

Unit 2: Application of UV-Visible spectroscopy

Applications – Qualitative analysis - Quantitative analysis - spectra of dienes - α,β -unsaturated ketones and aromatic carbonyl compounds – Woodward –Fieser rules - charge transfer complexes.

Unit 3: IR-Spectroscopy

Basic principles-stretching vibrations - Hook's law - Bending vibrations –Overtone and combination bands - Fermi resonance – Instrumentation

Unit 4: Application of IR-Spectroscopy

Applications to organic compounds - characteristic frequencies - effects of substitution, conjugation, bond angle and hydrogen bond - vibrational frequencies.

Block -2: NMR Spectroscopy

Unit 5: ^1H NMR Spectroscopy

Theory of ^1H NMR spectroscopy – chemical shift – factors affecting chemical shift – spin –spin coupling Instrumentation - first order and non-first order spectra - shift reagents

Unit 6: ^1H NMR Spectral Technique

Double resonance - spin tickling - Nuclear Overhauser Effect - Deuterium exchange reactions – Applications.

Unit 7: ^{13}C NMR Spectroscopy

^{13}C NMR, Theory, instrumentation, Application

Block -3: ESR, Mass Spectroscopy and ORD and CD

Unit8: ESR Spectroscopy

Theory – Instrumentation - Presentation of spectrum - comparison between ESR and NMR - 'g' values - applications to organic and inorganic compounds.

Unit 9: Mass Spectroscopy

Principle - parent ion - Meta stable ion - isotopic ions - Basic peak Nitrogen rule - Instrumentation – general rule of fragmentation - McLafferty rearrangement. Structural elucidation.

Unit 10: ORD and CD

Principle – Circular birefringence and circular dichromism– Cotton effect - ORD curves

Unit 11 Application of ORD and CD

Application on cotton effect curves - π -haloketone rule - octant rule - Applications for determination of conformation and configuration.

Block -4: Thermal and Spectrometric methods of analysis

Unit 12: Thermal analysis

Thermogravimetry - Differential thermal analysis - Differential scanning calorimetry - Thermometric titrations

Unit 13: Flame photometry

Principle, instrumentation and applications of flame photometry

Unit 14: Turbidimetry and Nephelometry

Principle, instrumentation and applications of turbidimetry and Nephelometry

Text Books

1. **Instrumental Methods of Analysis**, Willard, Merit Dean and Settle CBS Publishers and Distributors, IV edition, 1986.
2. **Principles of Instrumental Analysis**, Schoog, Holler, Nieman, Thomson, Asia Pvt. Ltd., Singapore, 2004.
3. **Spectrometric identification of organic compounds**, R.M Silverstein, C.G. Bassler and Morrill, VI Edition, John Wiley & Sons, New York, 2002.
4. **Text Book of Quantitative Inorganic Analysis**, A.I Vogel, ELBS III Edition, 1987.
5. **Instrumental methods of chemical analysis**, Chatwal and Anand, Himalaya publishing House New Delhi, 2000.

Reference Books

1. **Chemical Analysis: Modern Instrumentation Methods and Techniques**, F.Rouessac, A.Rouessac, 2nd Edition, Wiley & sons, USA, 2011.
2. **Analytical Chemistry**, J.G. Dick McGraw Hill Publishers, 1974.
3. **Instrumental Methods of Chemical Analysis**, G.W.Ewing McGraw Hill Pub, 1975.
4. **Instrumental methods in Electrochemistry**, R. Greef, R. Peat, L.M. Peter, D. Pletcher and J. Robinson, Ellis Horwood, Chichester, 1985.
5. **Spectroscopy of organic compounds**, P.S. Kalsi, Wiley Eastern Ltd., Madras, 1995.
6. **Fundamentals of Analytical Chemistry**, D.A. Skoog and D.M. West Holt Rinehart and Winston Publications, IV Edition, 2004.
7. **NMR in Chemistry**, W. Kemp, MacMillan Ltd, 1986.
8. **Spectroscopy in Inorganic Chemistry**, C.N.R. Rao, J.R. Ferraro, Methven Co., London, 1968.
9. **Basic Principles of Spectroscopy**, Raymond Chang, Mc Graw Hill Ltd., New York, 1993.
10. **Instrumental Analysis**, G. D. Christian and J.E.O Reilly, Allyn and Bacon Inc, II Edition, 1986.
11. **Structural methods in Inorganic Chemistry**, E.A.V. Ebsworth, D.WH. Rankine and S. Craddock, Black well Scientific Publ., 1987.
12. **Principles of Instrumental Analysis**, Schoog, Holler, Nieman, Thomson, Asia Pvt. Ltd., Singapore, 2004.
13. **Fundamentals of Analytical Chemistry**, D.A.Skoog and D.M.West, Winston Publications, IV Edition, 2004.
14. **Analytical chemistry: a modern approach to analytical science**, J.M. Mermet, M. Otto, R. Kellner, Wiley-VCH, 2004.

Course Code	Title of the Course
34434	INORGANIC CHEMISTRY PRACTICAL

Course Objectives

This course will help in developing practical skill with reference to separation, estimation by volumetric, gravimetric and complexometric method of analysis of metal ions.

Learning Outcomes

The student would have through practical knowledge in quantitative and qualitative estimation of inorganic cations, with suitable methods.

Block-1: Quantitative analysis of mixtures containing two components system-1

Unit 1: Separation and estimation of mixtures containing two components – 1

Separation and estimation of Cu^{2+} - Ni^{2+} mixtures by volumetric method and the other by gravimetric method.

Unit 2: Separation and estimation of mixtures containing two components – 2

Separation and estimation of Cu^{2+} – Ba^{2+} mixtures by volumetric method and the other by gravimetric method.

Unit 3: Separation and estimation of mixtures containing two components – 3

Separation and estimation of Cu^{2+} – Zn^{2+} mixtures by volumetric method and the other by gravimetric method

Unit 4: Separation and estimation of mixtures containing two components – 4

Separation and estimation of Fe^{2+} – Ni^{2+} mixtures by volumetric method and the other by gravimetric method

Block-2: Quantitative analysis of mixtures containing two components system-2

Unit 5: Separation and estimation of mixtures containing two components – 5

Separation and estimation of Fe^{2+} – Zn^{2+} mixtures by volumetric method and the other by gravimetric method

Unit 6: Separation and estimation of mixtures containing two components – 6

Separation and estimation of Fe^{2+} - Cu^{2+} mixtures by volumetric method and the other by gravimetric method

Unit 7: Separation and estimation of mixtures containing two components – 7

Separation and estimation of Zn^{2+} – Cu^{2+} mixtures by volumetric method and the other by gravimetric method

Block-3: Complexometric estimation of binary mixture of cations -1

Unit 8: Complexometric estimation of binary mixture of cations -1

Estimation of Bi^{2+} - Pb^{2+} mixtures using EDTA as a complexing agent by adopting any one of the techniques, like precipitation, pH variation, masking and demasking.

Unit 9: Complexometric estimation of binary mixture of cations -2

Estimation of $Pb^{2+} - Ca^{2+}$ mixtures using EDTA as a complexing agent by adopting any one of the techniques, like precipitation, pH variation, masking and demasking.

Unit 10: Complexometric estimation of binary mixture of cations - 3

Estimation of $Ni^{2+} - Cu^{2+}$ mixtures using EDTA as a complexing agent by adopting any one of the techniques, like precipitation, pH variation, masking and demasking.

Unit 11: Complexometric estimation of binary mixture of cations -4

Estimation of $Fe^{2+} - Ni^{2+}$ mixtures using EDTA as a complexing agent by adopting any one of the techniques, like precipitation, pH variation, masking and demasking.

Block-4: Complexometric estimation of binary mixture of cations -2

Unit 12: Complexometric estimation of binary mixture of cations -5

Estimation of $Zn^{2+} - Cu^{2+}$ mixtures using EDTA as a complexing agent by adopting any one of the techniques, like precipitation, pH variation, masking and demasking.

Unit 13: Complexometric estimation of binary mixture of cations -6

Estimation of $Co^{2+} - Cu^{2+}$ mixtures using EDTA as a complexing agent by adopting any one of the techniques, like precipitation, pH variation, masking and demasking.

Unit 14: Complexometric estimation of binary mixture of cations -7

Estimation of $Zn^{2+} - Ca^{2+}$ mixtures using EDTA as a complexing agent by adopting any one of the techniques, like precipitation, pH variation, masking and demasking.

Reference Books

1. **Vogel's qualitative Inorganic analysis**, G. Svehla, VI Edition, Orient Longman, 1987.
2. **Inorganic Semimicro Qualitative analysis**, V.V. Ramanujam, National Publishing Co., 1971.
3. **A Laboratory Manual of Inorganic Chemistry**, John Bernard Ekeley, BiblioLife, 2010.

FOURTH SEMESTER

Course Code	Title of the Course
34441	Analytical Chemistry

Course Objectives

The major objectives of this course are to understand the concepts of:

- ✓ Errors in chemical analysis, Statistical analysis and validation comparison of results
- ✓ Purification techniques
- ✓ Electro analytical methods
- ✓ Separation and identification of compounds by Chromatographic methods

Learning Outcomes

The student would be able to

- ✓ Predict the error
- ✓ To know about electroanalytical methods
- ✓ Understand the gas chromatography and High pressure liquid chromatography
- ✓ Know about the Purification techniques

Block-1: Error analysis

Unit 1: Errors in chemical analysis.

Errors in chemical analysis. Classification of errors- systematic and random, additive and proportional, absolute and relative.

Unit 2: Data analysis.

Accuracy and precision. Mean, median, average deviation and standard deviation. Significant figures and rules to determine significant figures. Calculations involving significant figures.

Unit 3: Comparison of results

Confidence limit, correlation coefficient and regression analysis. Comparison of methods: F-test and T-test. Rejection of data based on Q-test. Least squares method for deriving calibration graph.

Block-2: Electroanalytical methods

Unit 4: Electrodeics

Ion selective electrodes - Potentiometric methods – electrogravimetry - Coulometric analysis.

Unit 5: Polarography

Principles and applications of polarography – Instrumentation, Types of cells, advantages of dropping mercury electrode. and applications.

Unit 6: Cyclic voltammetry

AC polarography – Cyclic Voltammetry, Instrumentation, advantages over polarographic techniques – test of reversibility of electron transfer reactions – Application

Unit 7: Chrono techniques

Chronopotentiometry – instrumentation, advantages over polarography – controlled potential coulometry.

Block-3: Chromatography**Unit 8: Chromatographic methods**

Definition - Classification - Basic and elementary principle and practice of Paper chromatography. Thin Layer Chromatography

Unit 9: Gas Chromatography

Gas chromatographic techniques – Principle, instrumentation – injection system, column, and detector, application of GC.

Unit 10: GC-MS

Gas chromatographic –mass spectral techniques – Principle, instrumentation – interpretation and application of GC-MS

Unit 11: High Pressure Liquid Chromatography

Principle, types of HPLC, Normal and reversed phase liquid chromatography (NP- & RP LC); Instrumentation, Application

Block-4: Ion Chromatography, Purification Techniques and Ionic separation**Unit 12: Ion chromatography**

Theory, application of Ion exchange and gel permeation Chromatography

Unit 13 - Purification Techniques

General methods of isolation and purification of chemicals – Solvent extraction – Fractional crystallization – sublimation – distillation – vacuum distillation – purification of solvents.

Unit 14: Ionic Separations

Types of equipment employed for electrophoresis, Di-electrophoresis and electro dialysis Controlling factors, Applications.

Text Books

1. A.I Vogel, **Text Book of Quantitative organic Analysis**, ELBS III Edn, 1987.
2. Chatwal and Anand, **Instrumental methods of chemical analysis**, Himalaya publishing House New Delhi, 2000.
3. D.B.Hibbert and J.J. Gooding, **Data Analysis for chemistry**, Oxford University Press, 2006
4. Allen J.Bard and Faulkner, **Electrochemical Methods, Fundamentals and Applications**, John Wiley and Sons, New York, 1983.

Reference Books

1. Willard, Merit Dean and Settle, **Instrumental Methods of Analysis**, CBS Publishers, IV Edn., 1986.
2. Schoog, Holler, Nieman, Thomson, **Principles of Instrumental Analysis**, Asia Pvt. Ltd., Singapore, 2004.
3. D.A.Skoog and D.M.West, **Fundamentals of Analytical Chemistry**, Winston Publications, IV Edn, 2004.
4. J.M.Mermet, M.Otto, R.Kellner, **Analytical chemistry: a modern approach to analytical science**, Wiley-VCH, 2004.
5. F.Rouessac, A.Rouessac, **Chemical Analysis: Modern Instrumentation Methods and Techniques**, 2nd Edition, Wiley & sons, USA, 2011.
6. J. R. Lakowicz, **Principles of Fluorescence Spectroscopy**, 3rd Ed., Springer, New York, 2006.
7. Lacey, R.E. and S.Loeb - **Industrial Processing with Membranes**, Wiley -Inter Science, New York, 1972.
8. King, C.J. **Separation Processes** , Tata McGraw - Hill Publishing Co., Ltd., 1982.
9. 4. Ronald W.Roussel - Handbook of Separation Process Technology, John Wiley, New York, 1987.
10. James A. Plam Beck, **Electroanalytical Chemistry – Basic Principles and Applications**, John Wiley & Sons, 1982.

Course Code	Title of the Course
34442	APPLIED CHEMISTRY

Course Objectives

- To educate on the basic terminologies of the environment
- To develop knowledge about air, water and soil
- To create awareness various pollutions and abatements
- To gain an understanding of the principles of nanotechnology; characterization of nano structured materials; and tools and equipment for producing and assembling at the nano scale.
- To acquire advanced knowledge about the equipment used in nanotechnology such as XRD, SEM, TEM, STM, AFM, XPS, AES

Learning Outcomes

- ✓ The students will acquire basic knowledge about environment
- ✓ Environmental awareness about the various types of pollution and their control.
- ✓ This multidisciplinary course provides an in-depth view of the synthesis, characterisation and application of nanostructures using chemical routes. Necessarily, it will incorporate various concepts from colloidal chemistry, supramolecular chemistry, polymer chemistry and electrochemistry.
- ✓ This course will gain knowledge in the most exciting, novel and interdisciplinary issues in nanoscale science and Technology.

Block-1: Environmental Wastewater treatment methods and Electrochemical power sources

Unit – 1: Environmental Chemistry

Hazardous materials and their ill effects. Acid rain, Ozone hole and green house effect. Types of pollution – air, water, land, pesticide, thermal and radioactive. Physicochemical and biological investigations of water - water quality.

Unit – 2: Wastewater treatment methods

Pretreatment, preliminary treatment, secondary (or biological) methods of treatment and tertiary (or advanced) methods of wastewater treatment.

Unit – 3: Electrochemical power sources

Principle of energy conversion, electrochemical energy conversion, Classification of batteries - primary and secondary systems. Basic electrochemical reactions and performance of primary and secondary systems - Fuel cells - Introduction - Types of fuel cells, Advantages - fuel cell, supercapacitors.

Block-2: Electrochemistry-I

Unit – 4: Corrosion

Basic aspects of corrosion: Importance of corrosion studies – EMF and Galvanic series – classification of corrosion – corrosion kinetics – Pourbaix diagram for Fe- H₂O system – passivity

Unit – 5: Methods of corrosion

High temperature corrosion – Forms of corrosion. Chemical and Electrochemical methods of corrosion rate measurements methods.

Unit – 6: Corrosion control methods

General classification of corrosion control methods – Designing aspects in corrosion control – corrosion inhibitors – Electrochemical methods of protection

such as anodic and cathodic protection.

Block-3: Electrochemistry-II

Unit – 7: Electroplating

Principles of electroplating – Metal deposition from solutions of simple salts and complex salts – measurement of current density, throwing power and current efficiency of electroplating bath – surface preparation for electroplating. Electroplating of nickel and copper

Unit – 8: Electroforming

Principle and applications, Alloy plating of Brass, Brush plating, Cladding and Vapour deposition

Unit – 9 Electroless plating

Principles, advantages and limitations of electroless plating – Composite coating - principle, mechanism and their applications. Anodizing – principle, types of anodizing bath – colouring of anodizing aluminium.

Block-4: Nanomaterials, Characterization Techniques and Computer applications in Chemistry

Unit – 10: Nanomaterials

Brief introduction to nanoscience and technology. Preparatory synthesis - Sol-gel thermolysis, combustion method, solvothermal method and microemulsion method.

Unit – 11: Physical and chemical method of nanomaterials

Physical methods – vacuum evaporation, sputtering, pulsed laser deposition. Chemical methods - CVD, chemical solution deposition, electrochemical deposition, spray pyrolysis deposition.

Unit 12: Physical characterization techniques of nanomaterial

FT-IR, XPS and Laser Raman spectroscopy. XRD analysis. Microscopic techniques: SEM, AFM and TEM. Thermal analysis: TG/DTA and DSC.

Unit 13: Computer applications in Chemistry

Calculation of pH, solubility product, calculation of bond energy using Born-Landé equation. Standard deviation and correlation coefficient.

Unit 14: Online resources for chemistry

Introduction - Internet service providers, terms used in E-mail-search engines - chemistry databases- table of contents - source for list of journals – Online courses NPTEL,

Swayam, MOOC, virtual lab..

Text books

1. **Environmental Chemistry**, Sharma & Kaur, Krishna Publishers, New Delhi, 2000.
2. **Principles and prevention of corrosion**, D.Jones, Macmillan Publications New York, 1992.
3. **The Chemistry of nanomaterials; Synthesis, properties and applications**, C.N.R. Rao, Wiley-VCH Verlag GmbH&Co, Weinheim, 2004.
4. **Computers in Chemistry**, K.V. Raman, Tata McGraw Hill, New Delhi, 1993.

Reference Books

1. **Environmental Chemistry**, S.E Manahan CRC press, 2010.
2. **Environmental Chemistry**, S.K. Banerji, Prentice Hall of India, New Delhi, 2003.
3. **Wastewater treatment**, Ed. M. Henze, P. Harremoës, J.C. Jansen and E. Arvin, Springer Verlag, New York, 1995.
4. **Cathodic Protection Theory and practice**, J.J. Meketta, Marcel Dekker Publication, NY, 1993.
5. **An introduction of corrosion and corrosion inhibition**, S.N. Banerjee, Oxonian Press Ltd., New Delhi.

6. **Modern Electroplating**, K.A. Lowenheim, Second Edition, John Wiley & Sons, New York, 1963.
7. **BASIC Programming for Chemists**, P.C. Jurns, T.L. Isenhour and C.C. Wilkins, JW.& Sons 1987.
8. **Computers in Chemistry**, K.V. Raman, Tata McGraw Hill, New Delhi, 1993.
9. **Nanoscale materials in Chemsitry**, Kenneth J. Klabunde, John-Wiley & Sons, 2001.
10. **Environmental Chemistry for a Sustainable World: Remediation of Air and Water Pollution**, E. Lichtfouse, J. Schwarzbauer, D. Robert, Springer, 2011.

Course Code	Title of the Course
34443	ADVANCED PHYSICAL CHEMISTRY

Course Objectives: To make the students

- To understand the statistical thermodynamics
- To familiar with one dimensional harmonic oscillator, rigid rotator
- The basic of group theory and character table
- To study about salt effect and catalysis system.

Learning outcomes

The students will gain knowledge about

- ✓ Advanced concepts in quantum mechanics which make the students to understand the atomic orbitals and their structures.
- ✓ Recognize the importance of quantum chemistry and of its applications.
- ✓ Describe and understand the basic group theory and its applications
- ✓ Get deep knowledge about chemical kinetic of reaction in solution.

Block-1: Statistical thermodynamics

Unit – 1: Statistical thermodynamics

Maxwell - Boltzmann distribution law of molecular energies -
Negative absolute temperature - Entropy and probability,

Unit – 2: Partition functions

Partition functions and thermodynamic functions, translational, rotational and vibrational partition functions entropies and energies –
Equilibrium constant from partition function

Unit – 3: Statistical interpretation of third law

Statistical interpretation of third law - Bose-Einstein distribution law
Application of the law to photon gas - Fermi-Dirac distribution law -
Application of the law to electron gas

Unit – 4: Heat capacities of solids

Heat capacities of solids: Einstein and Debye's models - Non
equilibrium thermodynamics - Elementary treatment, Onsager
reciprocal relations.

Block-2: Quantum chemistry

Unit – 5: Quantum chemistry

Application of wave mechanics to simple systems - One dimensional
harmonic oscillator, rigid rotor

Unit – 6: Quantum mechanical treatment

Quantum mechanical treatment for radical and angular wave function
and hydrogen atom like atoms - Pauli's exclusion principle and Slater
determinant – Approximation methods– variation - time independent
perturbation and SCF methods

Unit – 7: HMO method

Application of variation methods to hydrogen atom - Application of

perturbation method to helium - HMO method – application to butadiene.

Block-3: Group theory

Unit – 8: Assignment of point groups

Symmetry elements and symmetry operations - Rules for forming a group, group multiplication table, group classification - Point groups and systematic assignment of point groups for molecules

Unit – 9: Matrix representation theory

Matrix representation theory - matrix multiplication, inverse of a matrix, matrix diagonalization and matrix representation for symmetry operations

Unit – 10: Character table

Reducible and irreducible representations.-Character table of C_{2v} and C_{3v} point groups. The great orthogonality theorem and character table - Direct product representation –

Unit – 11: Symmetry oriented spectral methods

Application of group theory to IR and Raman spectra - H_2O and NH_3 molecules - Application of group theory to electronic spectra ($HCHO$ and C_2H_4)

Block-4: Chemical kinetics

Unit – 12: Reactions in solution

Reactions in solution – factors which influence the reaction rates in solution. Application of ARRT to solution kinetics – Bronsted – Bjerrum equation,

Unit – 13: Salt effect

Primary salt effect, secondary salt effect - influence of internal pressure - effect of pressure and volume of activation. Effect of solvent: ion-ion and ion-dipole reactions- dielectric constant – Effect of substituents on reaction rates Hammett and Taft equations

Unit – 14: Acid base catalysis

Acid base catalysis-acidity functions – Bronsted relations - Zucker Hammett hypothesis – Enzyme catalysis – Michaelis – Menton equation- Lineweaver- Burke equation, Edie equation – Effect of pH and temperature on enzyme catalyzed reactions.

Text Books

1. **Statistical Thermodynamics**, M.C. Gupta, Wiley Eastern, New Delhi, 1990.
2. **Quantum Chemistry**, D.A. McQuarrie, University Science Books, Mill Valley, California, 1983.
3. **Group Theory**, A.K. Chandra, Discovery Publishing House, New Delhi, 2010.
4. **Kinetics and Mechanism of Chemical Transformations**, J. Rajaram and J.C. Kuriacose, MacMillan India Ltd. 1993.

Reference Books

1. **Introduction to Statistical Thermodynamics**, R.P.H. Gasser and W.G. Richards, World Scientific, Singapore, 1995.
2. **Quantum Chemistry**, R.K. Prasad, Wiley Eastern, New Delhi, 1992.
3. **Quantum Mechanics in Chemistry**, M.W. Hanna, W.A. Benjamin Inc. London, 1965.

4. **Chemical Application of Group Theory**, F.A. Cotton, John Wiley and Sons Inc. New York, 1971.
5. **Group theory and its applications to Chemistry**, K.V. Raman, Tata McGraw-Hill Publishing Company, 2008.
6. **Irreversible Thermodynamics**, J. Rajaram and J.C. Kuriacose, Lal Nagin Chand, New Delhi, 1989.
7. **Chemical Kinetics**, K.J. Laidler, Harper and Row, New York, 1987.
8. **Kinetics and Mechanism**, R.G. Frost and Pearson, Wiley New York, 1961
9. **Kinetics and Mechanism**, W.J. Moore and R.G. Pearson, 1981.
10. **Symmetry and spectroscopy of molecules**, K. Veera Raddy, New Age International Publishers; Second edition, 2009.

Course Code	Title of the Course
34444	PHYSICAL CHEMISTRY PRACTICAL

Course Objectives

- The Physical Chemistry practical course is designed such that to provide deep knowledge and hands on experimenting the more advanced physical chemistry practicals such as kinetics, distribution studies, conductometry, potentiometry, and spectrophotometric method

Learning outcomes

The students will be able to

- ✓ Carry out electrical experiments such as Conductometry and Potentiometric Titrations
- ✓ Determine out the kinetic parameters in the ester hydrolysis
- ✓ Understand the equilibrium reactions
- ✓ Determine the concentration by spectrophotometric method

Block-1: Partition Co-efficient

Unit 1: Partition Co-efficient - 1

Determination of Partition Co-efficient of iodine in water/

Unit 2: Partition Co-efficient - 2

Determination of Equilibrium constant of KI

Unit 3: Partition Co-efficient - 3

Determination of Unknown KI

Block-2: Conductometric titration

Unit 3: Conductometric titration of Acid vs Base

Conductometric titration of (i) strong acid vs strong base, (ii) weak acid vs strong base

(iii) mixture of acids vs strong base

Unit 4: Conductometric titration of Mixed halides

Conductometric titrations of mixed halides

Unit 5: Conductometric titration of solubility product Solubility product by conductivity measurement

Unit 6: Determine the strength of the given salt by conductometric titration

Determine the strength of the given salt solution by conductometric titration

Block-3: Potentiometric titration

Unit 7: Potentiometric titration of Acid vs Base

Potentiometric titration of strong acid vs strong base and weak acid vs strong base

Unit 8: Determine the strength of the given salt by Potentiometric titration

Determine the strength of the given salt solution by potentiometric titration (FAS vs $K_2Cr_2O_7$ and FAS vs $KMnO_4$)

Unit 9: Potentiometric titration of simple halides and Mixed halides

potentiometric titration of simple halide and mixture of halides

Block-4: Chemical Kinetics and Spectrophotometric method

Unit 10: First order and second order kinetics of hydrolysis of ester

Acid catalyzed hydrolysis of an ester, base catalyzed hydrolysis of an ester by titration method

Unit 11: Kinetics of hydrolysis of ester by conductivity method

Base catalyzed hydrolysis of an ester by conductivity method

Unit 12: Determination of metal by colorimeter

Determine the amount of manganese present in the given steel sample.

Unit 13: Determination of Iron by spectrophotometer method

Determine the amount of iron present in the given water sample by spectrophotometric method.

Unit 14: Determination of Copper by spectrophotometer method

Determine the amount of copper present in the given sample by spectrophotometric method.

REFERENCE BOOKS

1. Findlay's Practical Physical Chemistry, Revised and edited by 'B.P.Levitt, 9th edn., Longman, London, 1985.
2. Advanced Experimental Chemistry, J.N.Gurtu and R. Kapoor, Vol.I, S.Chand & Co. Ltd., New Delhi (1980).
3. Practical Physical Chemistry, B. Viswanathan and P.S. Raghavan, ViVa Books, 2009.
4. Systematic Experimental Physical Chemistry, S.W. Rajbhoj and T.K.Chondhekar, Anjali Publication, Aurangabad, 2000.

M.Sc-(Physics)

Sl. No.	Course Code No.	Title of the Course	Marks			Credit
			CIA	ESE	TOT	
FIRST YEAR						
I SEMESTER						
1	34511	Classical Mechanics	25	75	100	4
2	34512	Mathematical Physics - I	25	75	100	4
3	34513	Linear and Integrated Electronics	25	75	100	4
4	34514	Advanced Electronics and Physics Laboratory - I	25	75	100	4
Total			100	300	400	16
II SEMESTER						
5	34521	Quantum Mechanics - I	25	75	100	4
6	34522	Mathematical Physics - II	25	75	100	4
7	34523	Electromagnetic Theory	25	75	100	4
8	34524	Advanced Electronics and Physics Laboratory - II	25	75	100	4
Total			100	300	400	16
SECOND YEAR						
III SEMESTER						
9	34531	Molecular Spectroscopy	25	75	100	4
10	34532	Quantum Mechanics - II	25	75	100	4
11	34533	Microprocessor and Electronic Instrumentation	25	75	100	4
12	34534	Advanced Electronics and Physics Laboratory - III	25	75	100	4
Total			100	300	400	16
IV SEMESTER						
13	34541	Condensed Matter Physics	25	75	100	4
14	34542	Nuclear and Particle Physics	25	75	100	4
15	34543	Materials Science	25	75	100	4
16	34544	Advanced Electronics and Physics Laboratory - IV	25	75	100	4
Total			100	300	400	16

I SEMESTER

34511	CLASSICAL MECHANICS
Objectives	<i>The objective of the syllabus is to impart knowledge to the students on the basic ideas of classical mechanics and its applications.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Explain clearly the notion of degrees of freedom and identify them for a given mechanical system • Explain clearly the notion of degrees of phase space • Demonstrate an understanding of intermediate classical mechanics topics such as coordinate transformations, oscillatory motion, gravitation and other central forces, and Lagrangian mechanics
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on Newton's laws, simple and compound pendulum, moment of inertia, relativity theory, energy and oscillator are prerequisite.
	<i>BLOCK I : LAGRANGE AND HAMILTON EQUATIONS</i>
UNIT I	NEWTON'S LAWS OF MOTION
	Introduction – Newton's laws of motion- Kepler's laws of planetary motion- stability of orbit- Classification of a Dynamical System.
UNIT II	LAGRANGE EQUATION
	Lagrange's Equations for Simple Systems – Principle of Virtual Work – D'Alembert's principle – Lagrange's Equations for General Systems.
UNIT III	HAMILTON EQUATION
	Hamilton's Equations – Ignorable Coordinates – The Routhian Function.
UNIT IV	HAMILTONIAN METHODS
	Introduction – Hamilton's principle – Hamilton's Principle for a Conservative System – Principle of Least Action.
	<i>BLOCK II: HAMILTONIAN METHODS</i>
UNIT V	HAMILTON-JACOBI THEORY
	Characteristic Function and Hamilton-Jacobi Equation.
UNIT VI	CANONICAL TRANSFORMATIONS

	Phase Space and Liouville's Theorem – Special Transformations – Lagrange Brackets – Poisson Bracket – Calculus of Variations.
	<i>BLOCK III: KINEMATICS OF RIGID BODY MOTION AND SPECIAL THEORY OF RELATIVITY</i>
UNIT VII	KINEMATICS OF RIGID BODY MOTION
	Moments and Products of Inertia – Moment of Inertia of a Body about any Line – Through the origin of coordinate frame – The momental Ellipsoid – rotation Coordinate Axes.
UNIT VIII	RIGID BODY EQUATIONS OF MOTION
	Principal Axes and Principal Moments – Kinetic Energy of a Rigid Body Rotating about a Fixed Point – Angular Momentum of a Rigid Body – Eulerian Angles – The Compound Pendulum.
UNIT IX	SPECIAL THEORY OF RELATIVITY
	Some Fundamental Concepts: Theory of relativity, Equivalence of space and time.
UNIT X	LORENTZ TRANSFORMATION
	The Lorentz Transformation – Immediate Consequences of Lorentz transformations : contraction of length, time dilation, composition of velocities – The Mass of a Moving Particle – Equivalence of Mass and Energy.
	<i>BLOCK IV: SMALL OSCILLATIONS AND NORMAL MODES</i>
UNIT XI	ONE DIMENSIONAL OSCILLATOR
	Potential Energy and equilibrium - one dimensional oscillator: stable, unstable and neutral equilibrium.
UNIT XII	NORMAL MODES
	Two coupled oscillators - normal coordinates and normal modes.
UNIT XIII	GENERAL THEORY OF SMALL OSCILLATIONS
	General theory of small oscillations: secular equation and eigenvalue equation.
UNIT XIV	LINEAR TRIATOMIC MOLECULE
	Small oscillations in normal coordinates - vibrations of a linear triatomic molecule.

Book For Study	
1. Classical Mechanics, K. Sankara Rao, PHI Learning Private Limited – 2009, New Delhi.	
2. Classical Mechanics- J.C.Upadhyaya, Himalaya Publishing House-2 nd Edition, 2010.	
References	
1. Classical Mechanics- Herbert Goldstein –Pearson publishers-3rd Edition, 2011.	
2. Classical mechanics – S.L. Gupta, Meenakshi Prakashan, New Delhi, 1970.	
3. Introduction to Classical Mechanics - R.G. Takwala and P.S. Puranik, Tata - McGraw Hill, New Delhi, 1980.	
Mode of Evaluation	Assignment/Seminar/Written Examination

34512	MATHEMATICAL PHYSICS – I
Objectives	<i>The main objective of this paper is to impart understanding on the fundamental thoughts of mathematical physics to the students.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Master the basic elements of mathematical physics and demonstrate an ability to use vector analysis, matrices and special functions in the solution of physical problems
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on vectors, matrix, integration, differentiation and Laplace transforms are prerequisite.
	<i>BLOCK I: VECTOR ANALYSIS</i>
UNIT I	VECTOR ANALYSIS
	Introduction to vectors and product of vectors – Gradient, Divergence, curl.
UNIT II	INTEGRATION OF VECTORS
	Gauss's Theorem – Stoke's Theorem – Potential Theory – Gauss's law and Poisson's Equation – Dirac Delta function.
UNIT III	ORTHOGONAL CURVILINEAR COORDINATES
	Special Coordinate systems – Circular, Cylindrical Coordinates – Orthogonal coordinates – Differential Vector Operators – Spherical Polar Coordinates.
	<i>BLOCK II: MATRICES</i>
UNIT IV	ALGEBRA OF MATRICES
	Introduction to Matrix - Properties of matrix.
UNIT V	RANK OF MATRIX
	Rank of matrix and some of its theorems - Cramers rule - Characteristic equation.
UNIT VI	EIGEN VALUES, EIGEN VECTOR, DIAGONALIZATION
	Eigen values, eigenvectors, Orthogonal Matrices – Hermitian Matrices and Unitary Matrices – Diagonalization of Matrices - Solving differential equations.

	BLOCK III: SPECIAL FUNCTIONS
UNIT VII	GAMMA AND BETA FUNCTIONS
	Gamma function - Beta function – Relation between Gamma and Beta function.
UNIT VIII	LEGENDRE FUNCTION
	Legendre’s differential equation: Legendre polynomials - Generating functions - Recurrence relation - Rodrigue’s formula – Orthogonality.
UNIT IX	BESSEL’S FUNCTION
	Bessel’s differential equation: Bessel polynomials - Generating functions - Recurrence relation -Rodrigue’s formula – Orthogonality.
UNIT X	HERMITE FUNCTION
	Hermite differential equation – Generating functions – Hermite polynomials - Recurrence relations – Rodrigue’s formula – Orthogonality.
UNIT XI	LAGUERRE FUNCTION
	Laguerre differential equations – Generating functions - Laguerre polynomials - Recurrence relation - Rodrigue’s formula – Orthogonality.
	BLOCK IV: INTEGRAL TRANSFORMS
UNIT XII	FOURIER TRANSFORM
	Introduction and Definitions – Fourier Transforms – Development of the Inverse Fourier Transform – Fourier Transforms Inversion Theorem.
UNIT XIII	FOURIER TRANSFORM OF DERIVATIVES
	Fourier Transform of Derivatives – Convolution Theorem – Momentum Representation.
UNIT XIV	LAPLACE TRANSFORM
	Laplace Transforms – Laplace Transform of Derivatives – Other Properties – Convolution or Faltungs Theorem – Inverse Laplace Transform-applications.

Book For Study	
1. Essential Mathematical Methods for Physicists, George B. Arfken, Hanes J.Weber, Frank E. Harris, 7 th Edition, Elsevier, 2012.	
2. Advanced Engineering Mathematics, Erwin Kreyszig, 9 th Edition, Wiley, 2014.	
References	
1. Mathematical Physics, B.D. Gupta, Vikas Publishing House Pvt. Ltd, 2010.	
2. Mathematical Physics, Sathyaprakash, Sultan Chand, 2013.	
3. Topics in Mathematical Physics-Parthasarathy H, Ane Books Pvt. Ltd. 2007.	
Mode of Evaluation	Assignment/Seminar/Written Examination

34513	LINEAR AND INTEGRATED ELECTRONICS
Objectives	<i>The objective of the course is to impart in depth knowledge about Semiconductors, Diodes, Transistors, Operational amplifiers, etc to the students. The theoretical knowledge gained in the class room can be experimented in the practical classes.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Discuss the op-amp's basic construction, characteristics, parameter limitations, various configurations and countless applications of op-amp • Analyze and design basic op-amp circuits, particularly various linear and non-linear circuits, active filters, signal generators, and data converters
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on transistor, diode, amplifier, oscillators and semiconductor are prerequisite.
	<i>BLOCK I: SEMICONDUCTOR AND DIODE</i>
UNIT I	SEMICONDUCTOR PHYSICS
	Introduction to semiconductor – Intrinsic and extrinsic semiconductors – PN junction.
UNIT II	SEMICONDUCTOR DIODE
	Forward and Reverse bias of diode – Characteristics of forward and reverse bias of diode – Zener diode, its construction and characteristics – Zener diode as voltage regulator.
UNIT III	SPECIAL-PURPOSE DIODES
	Schottky diode – Tunnel diode - LED's.
	<i>BLOCK II: TRANSISTOR BIASING AND AMPLIFIER</i>
UNIT IV	TRANSISTORS
	Transistor action – Transistor connections: CB, CE and CC configurations.
UNIT V	TRANSISTOR AMPLIFIER
	Transistor as an amplifier: Class A, Class B and Class C operations and their field of application.
UNIT VI	TRANSISTOR BIASING
	Transistor biasing and stabilization – Need for biasing – DC load line – operating point – Bias stability – Transistor biasing circuits –Fixed bias circuit – Base bias with emitter feedback – Base bias with collector feedback – Voltage

	divider bias circuit.
UNIT VII	TRANSISTOR AUDIO POWER AMPLIFIER
	Class B push pull amplifier-Transformer coupled audio power amplifier.
	<i>BLOCK III: OPTO ELECTRONIC DEVICES AND OSCILLATORS</i>
UNIT VIII	FIELD EFFECT TRANSISTORS AND SILICON CONTROLLED RECTIFIER
	Construction, working and I/O characteristics of FET, JFET, MOSFET and SCR.
UNIT IX	POWER ELECTRONICS AND OPTO ELECTRONIC DEVICES
	Construction, working and I/O characteristics of DIAC and TRIAC, Solar cells, Photo detectors.
UNIT X	SINUSOIDAL OSCILLATORS
	Oscillator: Wien bridge – RC phase shift, Hartley, Colpitt’s oscillators.
	BLOCK IV: OPERATIONAL AMPLIFIER
UNIT XI	OPERATIONAL AMPLIFIER
	Operational amplifier – Block diagram of OP-AMP – Equivalent circuit of IC 741.
UNIT XII	ELECTRICAL PARAMETERS OF OP-AMP
	Electrical parameters – Input offset voltage and current input bias current – Differential input resistance – Input capacitance – Output offset voltage and nullification – CMRR – Slew rate.
UNIT XIII	APPLICATIONS OF OP-AMP
	Applications of OP-AMP 741: Inverting, Non-inverting Amplifiers – Adder – Subtractor – Comparator – Differentiator – Integrator – Analog computation.
UNIT XIV	ACTIVE FILTERS
	Active filters: First order high pass and low pass filters, Band pass filter.
Books For Study	
1. Electronic Principles – Albert Malvino, David J Bates, 7 th Edition, McGraw Hill. (2007). 2. Op-Amps and linear integrated circuits – Ramakant A.Gayakwad, 4 th Edition, Prentice Hall. (2009).	

References

1. Principles of Electronics – V.K.Mehta, 6th Revised Edition, S.Chand and Company. (2001).
2. Electronic Devices and circuits – David A.Bell, 4th Edition, Prentice Hall. (2007).

Mode of Evaluation	Assignment/Seminar/Written Examination
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34514	ADVANCED ELECTRONICS AND PHYSICS LABORATORY - I
Objectives	<i>The main objective of this practical paper is to exercise the practical in various advanced electronics and advanced analytical experiments to the students.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Understand the basic operations in electronic circuits • Develop the programming skills of Microprocessor • Understand the concept of ICs manufacturing • Appreciate the applications of Microprocessor programming • Understand the basic principles of the experiments • Understand simple concepts to demonstrate an experiment
Schedule	Contact Hours: 120 hours
Prerequisite	Basic knowledge on transistor, diode, amplifier, oscillators, semiconductor, spectrometer and microscope are prerequisite.
	<p style="text-align: center;">(Any Fifteen of the following)</p> <ol style="list-style-type: none"> 1. Study the characteristics of FET. 2. Study the characteristics of transistor (CE mode). 3. Study the characteristics of Zener diode and construct regulated DC power supply. 4. Construct the logic gates using discrete components. 5. Design of FET amplifier - CS Configuration. 6. Characteristics of UJT. 7. Relaxation oscillator (UJT). 8. Transistor Astable multivibrator. 9. Monostable multivibrator (Transistor).

	<ol style="list-style-type: none">10. Transistorized Hartely and Colpitt's audio oscillator.11. Calibration of Spectrograph – Iron or Copper spectrum.12. Michelson's Interferometer.13. q, n, σ - Elliptical fringes.14. q, n, σ - Hyperbolic fringes.15. Ultrasonic Interferometer – Construction of oscillator and measurements.16. Babinet's Compensator and study of polarized light.17. G.M Counter – Statistical probability, Absorption measurements, Half life.18. Any of the experiments of equal standard.
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II SEMESTER

34521	QUANTUM MECHANICS-I
Objectives	<i>The main objective of this paper is to impart knowledge on the fundamental aspects of quantum mechanics to the students.</i>
Outcome	<p>On successful completion of the course, a student will be able to</p> <ul style="list-style-type: none"> • Know the background for the main features in the historical development of quantum mechanics • Discuss and interpret experiments displaying wavelike behaviour of matter, and how this motivates the need to replace classical mechanics by a wave equation of motion for matter (the Schrödinger equation) • Understand the central concepts and principles of quantum mechanics: the Schrödinger equation, the wave function and its physical interpretation, stationary and non-stationary states, time evolution and expectation values
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on atom, particle and wave, light and time are prerequisite.
	BLOCK I: FOUNDATIONS
UNIT I	POSTULATES
	Wave particle duality – Uncertainty principle – applications – Postulates of quantum mechanics.
UNIT II	SCHRODINGER EQUATION
	Schrodinger equation – both time dependent and independent – Ehrenfest's theorem – eigen function and eigen vectors – probability density.
UNIT III	ONE DIMENSIONAL PROBLEM
	Applications to one dimensional problems: Linear harmonic oscillator and tunnel effect.
	BLOCK II: DISCRETE EIGEN VALUE PROBLEM
UNIT IV	THE FREE PARTICLE
	The free particle – Particle in a box.
UNIT V	THREE DIMENSIONAL PROBLEM

	Three dimensional harmonic oscillator – Rigid rotator.
UNIT VI	APPLICATION TO DIATOMIC MOLECULES
	Application to diatomic molecules – Hydrogen atom – Separation of variables and solution of R, θ, Φ equation – Discussion of bound states and parity.
	BLOCK III: REPRESENTATION THEORIES
UNIT VII	HARMONIC OSCILLATOR
	Dirac's ket and bra vectors – Harmonic oscillator – Solution using ladder operator and matrix representation.
UNIT VIII	QUANTUM DYNAMICS
	Schrödinger, Heisenberg and interaction pictures.
UNIT IX	TIME INDEPENDENT PERTURBATION THEORY
	Perturbation theory (first order) – Time independent – Stark effect in hydrogen atom.
UNIT X	VARIATIONAL PRINCIPLE
	Variation method – Ground state of helium atom – Ground state of Deuteron.
UNIT XI	W.K.B APPROXIMATION
	W.K.B approximation – Application to bound states.
	BLOCK IV: TIME EVOLUTION
UNIT XII	TIME DEPENDENT PERTURBATION THEORY
	Time dependent perturbation theory – The golden rule and application – Spontaneous emission – Stimulated emission.
UNIT XIII	QUANTUM THEORY OF RADIATION
	Einstein's A & B coefficients – Semi – classical and quantum theory of radiation – Eigen value and Eigen function.
UNIT XIV	THEORY OF SCATTERING
	Rayleigh and Raman scattering – Selection rules.
Books For Study	
1. Quantum Mechanics I: The Fundamentals, S. Rajasekar, R. Velusamy, CRC	

Press, 2015 2. A text book of Quantum Mechanics – P.M Mathews and K.Venkatesan, McGraw Hill, New Delhi 1975. 3. Quantum Mechanics – G.Aruldas – PHI Learning Private Limited, New Delhi 2009. 4. Quantum Mechanics - V.Devanathan, Alpha Science International, Limited, 2005.	
References	
1. Quantum Mechanics – L.Schiff, Mc Graw Hill, 1968. 2. Quantum Mechanics – J.P.Dicke and R.H.Wittke, Addison Wiley, 1978. 3. Quantum Mechanics - A.K. Ghatak and Lokanathan, McMillan, 1977. 4. Quantum Mechanics – R.Shankar, Springer, 1994.	
Mode of Evaluation	Assignment/Seminar/Written Examination

34522	MATHEMATICAL PHYSICS – II
Objectives	<i>The main objective of this paper is to impart understanding on the fundamental thoughts of mathematical physics to the students.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Create and solve mathematical models of physical phenomena using analytic and numerical methods • Design, execute, and interpret experiments to test hypotheses and mathematical models
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on vectors, matrix, integration, differentiation and Laplace transforms are prerequisite.
BLOCK I: COMPLEX VARIABLE	
UNIT I	
	Cauchy-Riemann Conditions – Cauchy’s Integral Formula – Laurent Expansion – Mapping – Conformal Mapping.
UNIT II	CALCULUS OF RESIDUES
	Singularities – Calculus of Residues and contour integrals – Method of Steepest Descents.
BLOCK II: APPLICATION OF PARTIAL DIFFERENTIAL EQUATIONS AND ORTHOGONAL FUNCTIONS	
UNIT III	SEPERATION OF VARIABLES
	Heat equation – Laplace and Poisson equation - wave equation - separation of variables.
UNIT IV	STURM LIOUVILLE PROBLEM
	Green’s Function – Sturm-Liouville theory - Self – Adjoint PDEs.
UNIT V	ORTHOGONALIZATION PROCESS
	Hermitian Operators – Gram-Schmidt Orthogonalization – Completeness of Eigen Functions.
BLOCK III: TENSOR ANALYSIS	
UNIT VI	INTRODUCTION TO TENSOR
	Introduction – The Algebra of Tensors – Quotient law – Cartesian Tensors.
UNIT VII	COVARIANT FORMULATION OF TENSORS

	Four vectors in special relativity – Covariant formulation of electrodynamics.
UNIT VIII	DUAL AND METRIC TENSORS
	Dual tensors, irreducible tensors - Metric Tensors - Christoffel symbols - Geodesics.
	BLOCK IV: GROUP THEORY AND PROBABILITY
UNIT IX	INTRODUCTION TO GROUP THEORY
	Definition of group – Homomorphism and Isomorphism.
UNIT X	MATRIX REPRESENTATION OF GROUP THEORY
	Matrix Representations: Reducible and Irreducible – Proof of the Orthogonality theorem.
UNIT XI	ROTATION GROUPS
	Rotation groups SO(2) and SO(3) – Special Unitary group SU(2) – The Character of a Representation – Construction of Character Tables.
UNIT XII	PHYSICAL APPLICATIONS OF GROUP THEORY
	Physical applications of group theory: Crystal – Symmetry operators – Crystallographic Point Groups.
UNIT XIII	THEORY OF PROBABILITY
	Probability Definitions, Simple Properties – Random Variables.
UNIT XIV	PROBABILITY DISTRIBUTION
	Binomial Distribution – Poisson Distribution – Gauss's Normal Distribution – Central limit theorem.
Books For Study	
1. Essential Mathematical Methods for Physicists, George B. Arfken, Hanes J.Weber, Frank E. Harris, 7 th Edition, Elsevier, 2012. 2. Advanced Engineering Mathematics, Erwin Kreyszig, 9th Edition, Wiley, 2014.	
References	
1. Mathematical Physics, B.D. Gupta, Vikas Publishing House Pvt. Ltd, 2010. 2. Mathematical Physics, Sathyaprakash, Sultan Chand, 2013. 3. Topics in Mathematical Physics-Parthasarathy H, Ane Books Pvt.Ltd 2007. 5. Chemical Applications of Group Theory, F. Albert Cotton, Addison Wiley, 2006.	
Mode of Evaluation	Assignment/Seminar/Written Examination

34523	ELECTROMAGNETIC THEORY
Objectives	<i>The main objective of this paper is to impart the understanding on the fundamental aspects of electromagnetic theory to the students.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Describe the electro and magnetostatics Maxwell's equations and propagation of EM waves • Describe the reflection, refraction, dispersion and scattering of electromagnetic waves
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on reflection, refraction, dispersion, scattering and microwaves are prerequisite.
	BLOCK I: ELECTRO AND MAGNETOSTATICS MAXWELL'S EQUATIONS AND PROBAGATION OF EM WAVES
UNIT I	ELECTRO AND MAGNETOSTATICS
	Basics-Electrostatics and Magnetostatics. - Wave equation in terms of scalar and vector potential – Transverse nature of electromagnetic wave.
UNIT II	FIELD EQUATIONS AND CONSERVATION LAWS
	Maxwell's equations – Poynting theorem - Conservation of energy and momentum, continuity equation.
UNIT III	ELECTROMAGNETIC WAVES AND WAVE PROPAGATION
	Propagation of plane electromagnetic waves in (a) free space, (b) Isotropic and Anisotropic non- conducting medium and (c) conducting medium- skin depth.
	BLOCK II: REFLECTION AND REFRACTION OF ELECTROMAGNETIC WAVES
UNIT IV	REFLECTION AND REFRACTION OF ELECTROMAGNETIC WAVES
	Boundary conditions at the surface of discontinuity - Reflection and refraction of electromagnetic waves at the interface of non-conducting media.
UNIT V	FRESNEL'S EQUATION
	Fresnel's equations – Reflection and transmission coefficients at the interface between two dielectric media.
UNIT VI	POLARIZATION

	Brewster's law and degree of polarization -Total internal reflection.
	<i>BLOCK III: DISPERSION AND SCATTERING OF EM WAVES</i>
UNIT VII	DISPERSION OF ELECTROMAGNETIC WAVES
	Normal and Anomalous dispersion – Dispersion in Gases – Experimental demonstration of Anomalous dispersion in gases- Solids and Liquids.
UNIT VIII	CLASUSIUS MOSSOTTI EQUATION
	Clasusius-Mossotti relation – Lorentz formula.
UNIT IX	SCATTERING OF ELECTROMAGNETIC WAVES
	Scattering and scattering parameters - Theory of scattering of e-m waves – polarization of scattered Light – coherence and incoherence of scattered light.
	<i>BLOCK IV: MICROWAVES, DYNAMICS OF CHARGED PARTICLES AND PLASMA PHYSICS</i>
UNIT X	WAVE GUIDES
	Wave guides: Rectangular and cylindrical waveguides.
UNIT XI	MICROWAVES
	Generation of microwaves – Klystron – Magnetron – Gunn diodes – Resonant cavities.
UNIT XII	DYNAMICS OF CHARGED PARTICLES
	Lienard-Wiechert potential-E.M fields from retarded potentials of moving point charge-e.m. fields of uniformly moving point charge- Radiation from moving charges.
UNIT XIII	PLASMA PHYSICS
	Introduction - Conditions for plasma existence – occurrence of plasma – charged particles in uniform constant electric field, in homogeneous magnetic fields, simultaneous homogeneous electric and magnetic fields, in nonhomogeneous magnetic fields.
UNIT XIV	MAGNETOHYDRODYNAMICS
	Magnetohydrodynamics – magnetic confinement -pinch effect-Instabilities- plasma waves.

Book For Study	
<ol style="list-style-type: none"> 1. Electromagnetic theory and Electrodynamics – Satya Prakash, Kedarnath Ramnath & Co, 2007 2. Introduction to Electrodynamics- D.J.Griffith, Pearson Education Ltd.-4rd Edn., 2014. 	
References	
<ol style="list-style-type: none"> 1. Electromagnetics – Kraus & Carver, TMH, 1973. 2. Electromagnetic fields and waves – Paul Lorain & Dale R.Corson, CBS publishers, NewDelhi, 1986. 3. Foundations of Electromagnetic theory – Reitz, Milford & Frederick, Narosa publishing House, 1986. 4. Introduction to electromagnetic theory- Chopra and Agarwal, (1984). 5. Classical Electrodynamics, J.D.Jackson, Wiley Eastern Limited, New Delhi, 1978. 	
Mode of Evaluation	Assignment/Seminar/Written Examination

34524	ADVANCED ELECTRONICS AND PHYSICS LABORATORY - II
Objectives	<i>The main objective of this practical paper is to exercise the practical in various advanced electronics and advanced analytical experiments to the students.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Understand the basic operations in electronic circuits • Develop the programming skills of Microprocessor • Understand the concept of ICs manufacturing • Appreciate the applications of Microprocessor programming • Understand the basic principles of the experiments • Understand simple concepts to demonstrate an experiment
Schedule	Contact Hours: 120 hours
Prerequisite	Basic knowledge on transistor, diode, amplifier, oscillators, semiconductor, spectrometer and microscope are prerequisite.
	<p style="text-align: center;">(Any Fifteen of the following)</p> <ol style="list-style-type: none"> 1. Half adders and Full adders. 2. Integrator and Differentiator circuits using IC 741. 3. Active filters using IC 741. 4. D/A converters (a) Ladder network (b) Weighted resistor method. 5. A/D converter. 6. Encoder - Decoder circuits. 7. Square wave, Sine wave and Triangular wave generators using IC. 8. Multiplexer circuits. 9. Flip – Flop circuits using IC. 10. Powder photograph – X-ray method.

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| | <ol style="list-style-type: none">11. Resistivity measurements of thin films.12. Hall effect – Mobility and Hall constant determination.13. Dielectric constant – Microwave frequency using klystron.14. Determination of Curie point – Ferromagnetic material.15. Susceptibility by Guoy's method.16. Susceptibility by Quincke's method.17. Reflection grating spectrometer.18. Any of the experiments of equal standard. |
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III SEMESTER

34531	MOLECULAR SPECTROSCOPY
Objectives	<i>The main objective of this paper is to impart understanding on the fundamental thoughts of Atomic and Molecular Spectroscopy in physics to the students.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Appreciate the principles of spectroscopy in the different regions of the electromagnetic spectrum • Apply the concepts of group theory to molecular vibrations • Relate the theory of spectroscopy to the study of molecular structure
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on bonding in solids and spectroscopy are prerequisite.
	<i>BLOCK I: SYMMETRY ASPECTS OF MOLECULAR ORBITALS AND ROTATIONAL SPECTRA</i>
UNIT I	MOLECULAR ORBITAL THEORY
	Valence bond theory – Molecular orbital theory- Heitler London theory for Hydrogen molecule - Hybridization – SP – SP ² & SP ³ Hybrids.
UNIT II	ROTATIONAL SPECTRA OF DIATOMIC MOLECULE
	Rotational energy of a diatomic molecule – Rigid and non-rigid rotators – isotopic substitution.
UNIT III	STARK EFFECT
	Stark effect – its importance in microwave spectroscopy – quadrupole hyperfine interaction.
UNIT IV	ROTATIONAL SPECTRA OF POLYATOMIC MOLECULES
	Rotational spectra of polyatomic molecules – pure rotational Raman spectra – diatomic linear molecule – symmetric top molecules.
UNIT V	MOLECULAR STRUCTURE
	Molecular structure – using IR & Raman spectroscopy.
	<i>BLOCK II: VIBRATIONAL PROPERTIES</i>
UNIT VI	VIBRATIONAL SPECTRA
	Vibrational spectra of diatomic and polyatomic molecules – Information on molecular constitution from IR studies.
UNIT VII	VIBRATIONAL RAMAN SPECTRA
	Vibrational Raman spectra – Vibrational course structure – Rotational course spectra.

UNIT VIII	FRANCK-CONDON PRINCIPLE
	Franck – Condon principle – intensity distribution – portrait parabolae – disassociation - predisassociation – mutual exclusion principle.
	<i>BLOCK III: NON LINEAR SPECTROSCOPIC PHENOMINA</i>
UNIT IX	HYPER RAMAN EFFECT
	Non linear Raman Phenomena-Hyper Raman effect- Classical treatment – Experimental techniques- Stimulated Raman Scattering.
UNIT X	INVERSE RAMAN EFFECT
	Inverse Raman Effect-Coherent Anti-Stoke’s Raman Scattering-Photo acoustic Raman Scattering.
UNIT XI	MULTIPHOTON SPECTROSCOPY
	Multi photon spectroscopy-two photon absorption- Multiphoton absorption. X-ray spectra; rotational and vibrational spectra of diatomic molecules.
	<i>BLOCK IV: RESONANCE SPECTROSCOPY</i>
UNIT XII	NUCLEAR RESONANCE
	Interaction between spin and magnetic field – Nuclear resonance – Bloch equations - Chemical shift – Dipole –Dipole interaction and spin lattice interaction.
UNIT XIII	ESR AND NQR SPECTROSCOPY
	ESR-NQR (principle only) spectroscopy and its application.
UNIT XIV	MOSSBAUER SPECTROSCOPY
	Mossbauer spectroscopy - applications – Electronic structure – molecular structure – crystal symmetry and molecular structures.
Book For Study	
<ol style="list-style-type: none"> 1. Handbook of Spectroscopy,1- 4 Volume, 2nd Edition., 2014, Gunter Gauglitz , David S. Moore , John Wiley & Sons, Inc., 2. Atomic and Molecular Spectroscopy Basic Concepts and Applications, By Rita Kakkar, 2015 Cambridge University Press. 3. Condensed-Phase Molecular Spectroscopy and Photophysics, Anne Myers Kelley, 2012, Wiley. 4. Raman Spectroscopy and its Application in Nanostructures, Shu-Lin Zhang , 2012, John Wiley & Sons, Inc., 	

References

1. Handbook of High-resolution Spectroscopy, Martin Quack, Frederic Merkt, 2011, John Wiley & Sons, Inc.,
2. Raman, Infrared, and Near-Infrared Chemical Imaging, Slobodan Sasic, Yukihiro Ozaki, 2010, John Wiley & Sons, Inc.,
3. Molecular structure and spectroscopy, G.Aruldhass, Prentice Hall of India, New Delhi – 2001.
4. Atomic and Molecular Spectroscopy, Mool Chand Guptha, New age International Publishers, New Delhi, (2001).
5. Instrumental methods of Chemical analysis, H.Gaur, Prgati Prakasan, Ist Edition, 2001.
6. Principles of Instrumental Analysis, Skoog, Holler and Nieman, Harcourt College Publishers, 5th edition, 2003.
7. Instrumental methods of analysis, Willard et al., CBS publishers, 2005.
8. Hand book of analytical instrumentation, R.S. Khandapur, McGraw Hill, (2006).
9. Chemical Applications of Group Theory F.A.Cotton (2009) Wiley student edition.

Mode of Evaluation	Assignment/Seminar/Written Examination
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34532	QUANTUM MECHANICS-II
Objectives	<i>The main objective of this paper is to impart in depth knowledge on the advanced theories of quantum mechanics to the students.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Apply principles of quantum mechanics to calculate observables on known wave functions • Grasp the concepts of spin and angular momentum, as well as their quantization- and addition rules • Explain physical properties of elementary particles, nucleons, atoms, molecules and solids (band structure) based on quantum mechanics
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on uncertainty and quantum concepts are prerequisite.
	<i>BLOCK I: THEORY OF ANGULAR MOMENTUM</i>
UNIT I	ANGULAR MOMENTUM
	Angular momentum of a system of particles – Commutation relations.
UNIT II	MATRIX REPRESENTATION OF ANGULAR MOMENTUM
	Matrix representation of angular momentum – Pauli spin matrices.
UNIT III	ADDITION OF ANGULAR MOMENTA
	Addition of two angular momenta – C.G. coefficients for $j = \frac{1}{2}$ system only.
	<i>BLOCK II: SELF CONSISTENT FIELD</i>
UNIT IV	CENTRAL FIELD APPROXIMATION
	Central field approximation – Thomson-Fermi Model of the Atom.
UNIT V	IDENTICAL PARTICLES
	Identical particles – Bosons and fermions – Symmetric and anti-symmetric wave functions.
UNIT VI	HARTREE EQUATION
	Hartree equation – Hartree-Fock Equation – Alkali atoms Doublet intensity and doublet separation - Periodic Table.
	<i>BLOCK III: RELATIVISTIC QUANTUM MECHANICS</i>

UNIT VII	KLEIN-GORDAN EQUATION
	Klein-Gordan equation – Application to Hydrogen atom.
UNIT VIII	RELATIVISTIC HAMILTONIAN
	Dirac’s Relativistic Hamiltonian – Dirac matrices and properties.
UNIT IX	DIRAC PARTICLE
	Spin of a Dirac particle – Negative energy states.
	<i>BLOCK IV: ELEMENTS OF FIELD QUANTIZATION AND SCATTERING THEORY</i>
UNIT X	RELATIVISTIC AND NON-RELATIVISTIC FIELD
	Elements of field quantization for non-relativistic field – Quantization of relativistic field.
UNIT XI	KLEIN-GORDAN FIELD
	Klein Gordon field - Dirac Field – Quantization of Electromagnetic field.
UNIT XII	SCATTERING CROSS SECTION
	Scattering cross section – scattering amplitude.
UNIT XIII	BORN APPROXIMATION
	Optical Theorem – Born approximation.
UNIT XIV	DIFFUSION SCATTERING
	Scattering by screened Coulomb potential – Diffusion Scattering – Particle wave analysis.
Book For Study	
<ol style="list-style-type: none"> 1. Quantum Mechanics II: Advanced Topics, S.Rajasekar, R.Velusamy, CRC Press, 2015. 2. Quantum mechanics – L.Schiff, Mc-Graw Hill, 1968. 3. Quantum mechanics – B.N.Srivastava, Pragati prakashan, 1975. 4. Text book of quantum mechanics, P.M. Mathews and K.Venkatesan, McGraw Hill, New Delhi, 1975. 5. Quantum Mechanics – G.Aruldas – PHI Learning Private Limited, New Delhi 2009. 	

References

1. Quantum mechanics - V.K. Thangappan, Wiley Eastern, 1985.
2. Quantum electrodynamics - P. G. Puranik, S.Chand & co, 1980.
3. A text book of quantum mechanics – A.K. Ghatak & Lokanathan, Mc Millan, 1977.
4. Quantum mechanics- Devanathan,Alpha Science International Ltd, United Kingdom (2011).

Mode of Evaluation	Assignment/Seminar/Written Examination
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34533	MICROPROCESSOR AND ELECTRONIC INSTRUMENTATION
Objectives	<i>This course is designed to provide students with the necessary foundation for entry-level industrial applications in process monitoring and controlling, with an emphasis on analysis, problem solving, exposure to open-ended problems and design methods. At the end of the course, students will be able to design an application based on microcontrollers or microprocessors.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Develop the programming skills of microprocessor • Appreciate the applications of microcontroller programming
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on instrumentation and programming are prerequisite.
	<i>BLOCK I: MICROPROCESSOR ARCHITECTURE (8085 AND 8086)</i>
UNIT I	MICROPROCESSOR ARCHITECTURE (8085)
	Introduction, Intel 8085 : Architecture, Instruction Cycle, Timing Diagram: Op-code fetch, Memory read & Memory write – Instruction Set : Instruction and Data Format, Addressing Modes, Status Flags, Instructions Set, Data Transfer, Arithmetic, Branching, and Logical group operations – Interrupts.
UNIT II	MICROPROCESSOR ARCHITECTURE (8086)
	Architecture of 8086, Pin diagram and pin function, Register organization, Minimum and Maximum mode operation of 8086.
	<i>BLOCK II: PROGRAMMING OF MICROPROCESSOR AND MICRO-CONTROLLER</i>
UNIT III	INSTRUCTIONS (8085)
	Instructions for 8085 – Software development tools – Assembly language programs with data transfer, arithmetic, logical, bit level instructions and branch instructions.
UNIT IV	INTERRUPTS AND STACK OPERATIONS OF 8085
	Interrupts and interrupt service routines-Subroutine – Flow charting – Loops – Pseudo instructions – Stack Operations- Programming and applications: Traffic control system.
UNIT VI	MICRO-CONTROLLER 8051
	Introduction to 8 bit micro-controller, Architecture of 8051- Hardware features of 8051 - Signal description of 8051-General Purpose and Special

	Function Registers- Oscillator and clock circuit-I/O Port-Memory organization and I/O addressing by 8051, Interrupts of 8051.
UNIT VI	8051 INSTRUCTION SET AND PROGRAMMING
	Instructions set of 8051-Programming of 8051 (Simple Arithmetic and Logical programs).
	<i>BLOCK III:INTERFACING DEVICES</i>
UNIT VII	INTRODUCTION TO INTERFACING DEVICES
	Address space partition - Memory & I/O Interfacing – Data transfer schemes – Interrupts - I/O Ports.
UNIT VIII	INTERFACING DEVICES (8255 AND 8259)
	Programmable Peripheral Interface:8255 – Programmable Interrupt Controller :8259.
UNIT IX	INTERFACING DEVICES (8257 AND 8251)
	Programmable DMA Controllers:8257 – Programmable Communication Interface:8251.
UNIT X	MICROPROCESSOR APPLICATIONS
	A/D Sub systems - Applications – Temperature monitoring and Stepper motor control.
	<i>BLOCK IV: ELECTRONIC INSTRUMENTATION</i>
UNIT XI	AMPLIFIERS AND COMPARATORS
	Instrumentation amplifiers, Sample and hold circuits, Comparators, – D/A – Weighted resistor method – Resistor ladder net work method – A/D – Successive approximation method.
UNIT XII	TEMPERATURE TRANSDUCERS
	Classification of transducers - Temperature transducers: thermo-resistive transducers, thermoelectric, p-n junction, chemical thermometry.
UNIT XIII	DISPLACEMENT TRANSDUCERS
	Displacement transducers: potentiometer, resistive strain gauges, capacitive displacement transducer, LVDT transducers.
UNIT XIV	PHOTOELECTRIC TRANSDUCERS
	Photoelectric transducers: photovoltaic cell, photoconductive cell- Piezoelectric transducers.

Book For Study	
<ol style="list-style-type: none"> 1. Fundamentals of Microprocessors and Microcomputers - B. Ram, 8th Edition, Dhanpat Rai Publications (P) Ltd., New Delhi, 2010. 2. Microprocessors and Microcontrollers – A.Nagoor Kani, , 2nd Edition, Mc Graw Hill Education, 2012. 3. Transducers and Instrumentation, D.V.S.Murthy, 2nd Edition, PHI Learning Private Limited -New Delhi, 2008. 	
References	
<ol style="list-style-type: none"> 1. Microprocessor Architecture, Programming and Applications- R. Gaonkar, Pearson, 1998 2. Advanced Microprocessor and Principles- A.K. Ray, K.M. Bhurchandi, 3rd Edition, Tata Mc Graw Hill Publication Co. Ltd. New Delhi. 2003. 	
Mode of Evaluation	Assignment/Seminar/Written Examination

34534	ADVANCED ELECTRONICS AND PHYSICS LABORATORY - III
Objectives	<i>The main objective of this practical paper is to exercise the practical in various advanced electronics and advanced analytical experiments to the students.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Understand the basic operations in electronic circuits • Develop the programming skills of Microprocessor • Understand the concept of ICs manufacturing • Appreciate the applications of Microprocessor programming • Understand the basic principles of the experiments • Understand simple concepts to demonstrate an experiment
Schedule	Contact Hours: 120 hours
Prerequisite	Basic knowledge on transistor, diode, amplifier, oscillators, semiconductor, spectrometer and microscope are prerequisite.
	<p style="text-align: center;">(Any Fifteen of the following)</p> <ol style="list-style-type: none"> 1. Study of Counters. 2. Monostable multivibrator using op-amp. 3. Astable multivibrator using op-amp and using IC 555. 4. Schmitt trigger using op-amp. 5. Voltage comparator. 6. Demultiplexer. 7. Logic gates using IC's. 8. Young's modulus – Cornu's method. 9. Refractive index of liquid by laser.

	<ol style="list-style-type: none">10. Optical absorption studies using lasers.11. Determination of wavelength of a laser source by diffraction grating.12. Determination of Charge of an electron using spectrometer.13. Thermal expansion using optical air wedge.14. Ultrasonic interferometer.15. Electron spin resonance spectrometer.16. Magnetic Hysteresis loop tracer.17. Measurements and inverse square law verification.18. Any of the experiments of equal standard.
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IV SEMESTER

34541	CONDENSED MATTER PHYSICS
Objectives	<i>The objective of the course is to impart knowledge about crystalline structures, lattice vibrations, dielectrics, magnetism and superconductivity to the students. Understanding the content of this course will be useful for the students to carry out research work after the completion of Master's degree.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Calculate reciprocal lattice vectors for typical high symmetrical crystals and the relationship between Miller indices (hkl) and the distance between the lattice planes is to be understood • Energy band structure should be explained in terms of the periodic potential and illustrated by using Kronig-Penny model • Classification into metals, semiconductors and insulators anchored in the energy band structure
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on bonding in solids and crystal structure are prerequisite.
	<i>BLOCK I: CRYSTAL STRUCTURE AND LATTICES</i>
UNIT I	CRYSTAL STRUCTURE
	Crystalline solids – Crystal lattice and crystal structure, Symmetry elements, Ordered Phase of Matter.
UNIT II	CRYSTAL SYSTEMS
	Translation & Orientation Order, Space lattice, Unit cell and primitive cell – Bravais lattice, Crystal systems.
UNIT III	LATTICES
	Type of lattices: SC, BCC, FCC, HCP – Miller indices – Reciprocal lattice - Wigner-seitz cells – bonding in solids.
	<i>BLOCK II: LATTICE VIBRATIONS, BAND THEORY OF SOLIDS AND DIELECTRIC PROPERTIES OF MATERIALS</i>
UNIT IV	LATTICE VIBRATIONS
	Lattice vibrations – Diatomic lattices – Phonons.
UNIT V	FREE ELECTRON FERMI GAS
	Electrical properties of metals – Free electron gas in three dimensions –

	Fermi energy – Hall effect.
UNIT VI	BAND THEORY OF SOLIDS
	Band theory of solids – Kronig–Penny model – Semiconductors – Classification – Fermi energies of impurity semiconductors.
UNIT VII	DIELECTRIC PROPERTIES OF MATERIALS
	Polarization – Local electric field, Clausius-Mosotti relation – Polarization field – Lorentz field.
UNIT VIII	DIELECTRIC CONSTANT AND POLARIZABILITY
	Dielectric constant – Polarizability: Electronic, Ionic- Piezo – Pyro and ferro electric properties of crystals.
	<i>BLOCK III: MAGNETISM</i>
UNIT IX	PARAMAGNETISM
	Classification of magnetic materials – Langevin’s theory of paramagnetism – Quantum theory of paramagnetism.
UNIT X	FERROMAGNETISM
	Ferromagnetism – Weiss Molecular Field Theory – Ferromagnetic domains.
UNIT XI	ANTIFERROMAGNETISM AND FERRIMAGNETISM
	Antiferromagnetism – Neel’s Theory – Ferrimagnetism and ferrites.
UNIT XII	MAGNETIC MATERIALS
	Spin waves – Hard and soft magnetic materials.
	<i>BLOCK IV: SUPERCONDUCTIVITY</i>
UNIT XIII	SUPERCONDUCTIVITY – EXPERIMENTAL SURVEY
	Introduction – Meissner effect – Isotope effect – Type I and Type II superconductors.
UNIT XIV	SUPERCONDUCTIVITY – THEORETICAL SURVEY
	London equations – Coherence length – BCS Theory – Cooper pair – Normal tunneling and Josephson Effect – High temperature superconductors.
Book For Study	

1. Solid State Physics – Structure and properties of Materials – M.A. Wahab, Second edition, Narosa publishers. 2005.
2. Introduction to Solid State Physics – Charles Kittel, 7th Edition, John Wiley & Sons. (1971).

References

1. Solid State Physics – S.O. Pillai, Wiley Eastern Ltd. (2005).
2. Solid State Physics – B.S. Saxena, R.C. Gupta and P.N. Saxena – Pragati Prakasham – Meerut.
3. Solid State Physics – A.J. Dekkar, Macmillan India Ltd., 1600.
4. Solid State Physics – S.L. Kahani, C. Hemaranjani – Sulton Chand & Sons.

Mode of Evaluation	Assignment/Seminar/Written Examination
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34542	NUCLEAR AND PARTICLE PHYSICS
Objectives	<i>The main objective of this paper is to impart understanding on the fundamental knowledge of Nuclear & particle physics to the students.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Identify the fundamental models of nuclear structure that are used to describe various modes of nuclear excitation • Lay out the foundation that allows interpreting the observations obtained in typical nuclear structure experiments
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on particle, atom and nucleus are prerequisite.
	BLOCK I: NUCLEAR DECAY AND NUCLEAR MODELS
UNIT I	NUCLEAR DECAY – ALPHA AND GAMMA DECAY
	Gamow’s Theory of Alpha decay – Gamma decay – Internal Conversion Nuclear Isomerism.
UNIT II	NUCLEAR DECAY – BETA DECAY
	Fermi’s theory of Beta decay – Kurie plots – Selection rules – Electron capture – Parity violation in Beta decay - Neutrinos – Measurement of neutrino helicity.
UNIT III	NUCLEAR LIQUID DROP AND COLLECTIVE MODELS
	Liquid Drop model – Bohr Wheeler theory – Schmidt lines – Magnetic dipole moment – Electric quadrupole moment – Collective Model.
UNIT IV	NUCLEAR SHELL MODEL
	Shell model – Single particle model, its validity and limitations – Rotational Spectra - Magic numbers – Spin – orbit coupling - Angular momentum of nucleus ground states – Magnetic Moments of the shell model.
	BLOCK II: NUCLEAR FISSION, FUSION
UNIT V	NUCLEAR REACTION AND MECHANISM
	Nuclear Fission and Fusion. Nuclear reactions, reaction mechanisms, compound nuclei and direct reactions: Simple theory of deuteron – Tensor forces (qualitative).

UNIT VI	NUCLEAR FORCE
	Nature of nuclear force, form of nucleon-nucleon potential, charge independence and charge symmetry of nuclear forces - Normalization of deuteron wave functions.
UNIT VII	PARTIAL WAVE ANALYSIS
	Method of partial wave analysis and phase shifts - Effective range theory – n-p scattering at low energies– Yukawa’s meson theory of nuclear forces.
	BLOCK III: REACTION CROSS SECTIONS AND NUCLEAR REACTORS
UNIT VIII	REACTION CROSS SECTIONS
	Nuclear cross sections – Compound nuclear formation and breakup – Resonance scattering cross section.
UNIT IX	NEUTRONS
	Interaction of neutron with matter – Thermal neutrons – neutron cycle in a thermo nuclear reactor – Critical size.
UNIT X	NUCLEAR REACTORS
	Types of nuclear reactors - cylindrical and spherical- sub-nuclear particles (elementary ideas only) – source of stellar energy – controlled thermo nuclear reactions.
	BLOCK IV: ELEMENTARY PARTICLES
UNIT XI	FUNDAMENTAL INTERACTIONS IN NATURE
	Classification of fundamental forces – Particle Directory and quantum numbers (Charge, spin, parity, iso-spin, strangeness etc).
UNIT XII	CLASSIFICATION OF ELEMENTARY PARTICLES
	Leptons, Baryons and quarks. Spin and parity assignments, isospin, strangeness.
UNIT XIII	GEL-MANN-NISHIJIMA RELATION
	The fundamental interactions – Translations in space – Rotations in space – SU(2) and SU(3) groups – Charge conjugation – Parity – Gell-Mann-Nishijima formula.
UNIT XIV	SYMMETRIES

	Time reversal–CPT invariance- Applications of symmetry arguments to particle reactions, Parity non-conservation in weak interaction; Relativistic kinematics.
Book For Study	
<ol style="list-style-type: none"> 1. Introduction to Elementary Particle Physics, Alessandro Bettin, 2nd Edition, 2014, Cambridge University Press. 2. Nuclear and Particle Physics, Claude Amsler, 2015, Iop Publishing Limited. 3. Modern Particle Physics, Mark Thomson, 2013, Cambridge University Press. 	
References	
<ol style="list-style-type: none"> 1. Nuclear and Particle Physics: An Introduction, 2nd Edition, Brian R. Martin, 2009, John Wiley & Sons, Inc. 2. Introduction to Nuclear and Particle Physics: Solutions Manual for Second Edition, C. Bromberg, Ashok Das, Thomas, 2006, Ferbel, World Scientific, Pvt Ltd 3. Modern Physics- R.Murugesan Kiruthiga Sivaprasath, 2008, S.Chand & Company Ltd, New Delhi, 30th Revised Multicolour edition. 4. Introductory Nuclear Physics-Samuel S.M. Wong, 2005, Printice Hall of India Pvt Ltd, New Delhi. 5. Nuclear Physics (Principle and applications)-J.S.Lilly, 2001, John Wiley & Sons (ASIA) Pte Ltd, Singapore. 6. Fundamentals and Nuclear Physics, Jean – Louis Basdevant, James Rich and Michel Spiro, 2005, Springer. 	
Mode of Evaluation	Assignment/Seminar/Written Examination

34543	MATERIALS SCIENCE
Objectives	<i>The main objective of this paper is to impart an interdisciplinary understanding on the fundamental scientific principles and concepts of materials that are essential for both practice and advanced study in the field of Materials Science.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Obtain the basis for understanding the link between different processing techniques and the characteristics of materials • Provide insight into some of the steps in the production of semiconductor devices • Provide an introduction to experimental methods that are used in parts of materials science
Schedule	Contact Hours: 16 hours
Prerequisite	Basic knowledge on material and thin films are Prerequisite.
	<i>BLOCK I: MATERIAL BEHAVIOUR</i>
UNIT I	ELASTIC BEHAVIOUR OF MATERIAL
	Elastic, Inelastic and Viscoelastic behaviour of materials – tensile strength, toughness, elongation, plastic deformation, hardness, creep and fatigue.
UNIT II	POLYMERS
	Polymers - Structure and Properties - Addition and condensation polymerization – Polymer types.
UNIT III	APPLICATION OF POLYMERS
	Application of polymers - Corrosion and Oxidation of metals – Prevention - Corrosion resistance materials.
	<i>BLOCK II: THIN FILMS</i>
UNIT IV	VACUUM PUMPS
	Kinetic Theory of gases – Gas Transport and Pumping – Vacuum Pumps – Rotary, Diffusion and Turbo molecular Pumps – Pirani and Penning Gauges.
UNIT V	THIN FILMS BY EVAPORATION
	Thin films by Thermal evaporation – Thickness measurement – Quartz crystal method.

UNIT VI	THIN FILMS BY EPITAXY
	Epitaxy – Structural Aspects – Lattice Misfit and Imperfections – Liquid Phase Epitaxy – Vapour Phase Epitaxy – Epitaxy of compound semiconductors – Applications.
	<i>BLOCK III: OPTICAL MATERIALS</i>
UNIT VII	PRINCIPLES OF LASER
	Principles of Laser - Population inversion in three level and four level systems – Resonators-Q-switching and Mode locking.
UNIT VIII	TYPES OF LASER
	Solid state lasers – Ruby and Nd-YAG - Semiconductor lasers – GaAs/AlGaAs semiconductor laser – Gas lasers – He-Ne and CO ₂ Lasers.
UNIT IX	NON-LINEAR OPTICAL PROPERTIES OF MATERIALS
	Electro-optic Effect – Pockel’s effect, Kerr effect – Second harmonic generators – Electro-optic Modulators – Photorefractive Materials – Acousto-optic effect.
	<i>BLOCK IV: COMPOSITE AND SMART MATERIALS</i>
UNIT X	COMPOSITE MATERIALS
	Introduction – Polymer-matrix composites – Cement-matrix composites – Carbon-matrix composites – Metal-matrix composites – Ceramic-matrix composites.
UNIT XI	APPLICATIONS OF COMPOSITE MATERIALS
	Applications – Structural – Electronic – Thermal – Electrochemical – Environmental – Biomedical.
UNIT XII	SMART MATERIALS
	Amorphous and glassy materials – Structure – Preparation methods and novel properties.
UNIT XIII	APPLICATIONS OF SMART MATERIALS
	Shape memory alloys – Working mechanism – Pseudo elasticity – Applications – Nickel-Titanium (Nitinol) alloys – Material characteristics of Nitinol.
UNIT XIV	MICRO ELECTRO MECHANICAL SYSTEMS

	Introduction to Micro Electro Mechanical Systems (MEMS) – Silicon, porous Silicon and Silicon oxide based MEMS –Fabrication of piezoelectric and Piezo-resistive MEMS materials – Application to micro-actuators and microaccelerometers.
Book For Study	
<ol style="list-style-type: none"> 1. Materials Science and Engineering – V. Raghavan, 6th Edition, PHI Learning, 2015. 2. Materials Science and Thin Films – Milton Ohring, 2nd Edition, ELSER, 2009. 3. Laser and Non Linear Optics- B.B. Laud, 3rd Edition, New Age International Limited, 2011. 4. Composite Materials: Science and Applications – Deborah.D.L. Chung, ANE-Books, New Delhi, 2011. 5. Smart Material Systems And MEMS: Design And Development Methodologies- Vijay K.Varadan, K.J. Vinoy, S. Gopalakrishnan, Wiley India, 2011. 	
References	
<ol style="list-style-type: none"> 1. Introduction to Materials Science for Engineers – James F. Shackelford, Madanapalli K. Muralidhara, Pearson India, 2006 2. Handbook of Thin Film Deposition: Principles, Methods, Equipment and Applications- Seshan, 2nd Edition, William Andrew Publishing, 2002. 	
Mode of Evaluation	Assignment/Seminar/Written Examination

34544	ADVANCED ELECTRONICS AND PHYSICS LABORATORY - IV
Objectives	<i>The main objective of this practical paper is to exercise the practical in various advanced electronics and advanced analytical experiments to the students.</i>
Outcome	On successful completion of the course, a student will be able to <ul style="list-style-type: none"> • Understand the basic operations in electronic circuits • Develop the programming skills of Microprocessor • Understand the concept of ICs manufacturing • Appreciate the applications of Microprocessor programming • Understand the basic principles of the experiments • Understand simple concepts to demonstrate an experiment
Schedule	Contact Hours: 120 hours
Prerequisite	Basic knowledge on transistor, diode, amplifier, oscillators, semiconductor, spectrometer and microscope are prerequisite.
	<p style="text-align: center;">(Any Fifteen of the following)</p> <ol style="list-style-type: none"> 1. BCD to 7 segment display and BCD decoder. 2. Shift register and ring counter. 3. Operation of 7489 RAMS. 4. Arithmetic operations – Microprocessor 8085. 5. Logical operations - Microprocessor 8085. 6. Code conversion - Microprocessor 8085. 7. Determination of Plank’s constant using photocell apparatus. 8. e/m by Millikan’s oil drop method. 9. e/m by Thompson’s oil drop method.

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| | <ol style="list-style-type: none">10. Thermal Conductivity of a bad conductor (Lees Method).11. Hydrogen spectrum and Rydberg's constant.12. Determination of BH and M using magnetometers.13. Determination of Stefan's constant.14. Fabrey-Perot interferometer.15. Solar cell characteristics.16. Polarizability of liquids – Hollow prism – Spectrometer.17. Determination of specific rotatory power of a liquid using polarimeter.18. Any of the experiments of equal standard. |
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M.Sc- (Botony)

Sl. No.	Course Code	Title of the Course	CIA Max.	ESE Max.	TOT Max.	C Max.
FIRST YEAR						
I Semester						
1.	34611	Plant Diversity	25	75	100	4
2.	34612	Plant Taxonomy	25	75	100	4
3.	34613	Biological Techniques in Botany	25	75	100	4
4.	34614	Practical – Lab I: Plant Diversity, Plant Taxonomy and Biological Techniques in Botany	25	75	100	4
		Total	100	300	400	16
II Semester						
5.	34621	Cell Biology, Genetics and Plant Breeding	25	75	100	4
6.	34622	Plant Anatomy and Embryology	25	75	100	4
7.	34623	Plant Physiology and Biochemistry	25	75	100	4
8.	34624	Practical – Lab II: Cell Biology, Genetics & Plant Breeding, Plant Anatomy & Embryology, Plant Physiology and Biochemistry	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III Semester						
9.	34631	Microbiology and Plant Pathology	25	75	100	4
10.	34632	Ecology, Biodiversity Conservation and Economic Botany	25	75	100	4
11.	34633	Algal Technology and Mushroom Technology	25	75	100	4
12.	34634	Practical – Lab III: Microbiology & Plant Pathology, Ecology, Biodiversity Conservation, Economic Botany, Algal Technology and Mushroom Technology	25	75	100	4
		Total	100	300	400	16
IV Semester						
13.	34641	Plant Molecular Biology	25	75	100	4
14.	34642	Biostatistics, Biophysics and Bioinformatics	25	75	100	4
15.	34643	Horticulture and Plant Tissue Culture	25	75	100	4
16.	34644	Practical - Lab IV: Plant Molecular Biology, Biostatistics, Biophysics and Bioinformatics, Horticulture and Plant Tissue Culture	25	75	100	4
		Total	100	300	400	16
		Grand Total	400	1200	1600	64

e. 2. Detailed Syllabi:

FIRST SEMESTER

Course Code	Title of the Course
34611	Plant Diversity

Objectives:

- To understand diversity of algae, fungi, lichens and bryophytes.
- To define and characterize diversity of lower vascular plants.
- To understand the dynamics of diversity
- To realize the significance of diversity.

Possible Outcomes of the course:

- The course will enrich the knowledge on algae, fungi, lichens and bryophytes.
- The course will impart the adequate knowledge about lower vascular plants.
- The course will help the students to have an insight on evolutionary approach with the plant kingdom.
- The course will help the students to answer the questions in competitive exams viz., SET, NET, GATE, etc. successfully.

Block 1: Algae:

Unit-1: Definitions and concepts of plant diversity- Thallus organization in Algae.

Unit -2: Reproduction and life cycle patterns in algae- Classification of algae (Smith).

Unit-3: Reproduction and life cycles in *Cyanophyceae*, *Chlorophyceae*, *Phaeophyceae* and *Rhodophyceae* (Comparative study only).

Block 2: Fungi; Lichens:

Unit-4: Classification of fungi (Alexopoulos and Mims, 1979).

Unit-5: Thallus organization and Reproductive pattern in fungi.

Unit-6: Life cycle patterns in fungi (Phycomycetes to Deuteromycetes) - Spores and spore dispersal mechanisms exhibited by fungi.

Unit-7: General account on Lichen- Classification of lichens (Miller, 1984) - Structure and reproduction of lichen.

Block 3: Bryophytes:

Unit-8: Classification of bryophytes (Watson, 1964).

Unit-9: Structural variations in the gametophytes and sporophytes of *Marchantiales*, *Sphaerocarpaceae*, *Jungermanniales*, and *Calobryales* (Comparative study only).

Unit-10: Structural variations in the gametophytes and sporophytes of *Anthocerotales*, *Sphagnales*, *Andreales* and *Bryales* (Comparative study only).

Block 4: The Lower Vascular Plants (Pteridophytes and Gymnosperms) :

Unit- 11: Classification of Pteridophytes (Reiner's).

Unit- 12: General characteristics and life cycle patterns in *Psilopsida*, *Lycopsida*, *Sphenopsida* and *Pteropsida*. - Study of fossils in Pteridophytes (*Sphenophyllum*, *Lepidodendron*).

Unit- 13: Classification (K.R.Sporne, 1967) of Gymnosperms.

Unit- 14: General characteristics of *Cycadales*, *Ginkgoales*, *Coniferales* and *Gnetales* (Comparative study only). - Study of fossil gymnosperms (*Medullosa*, *Cycadeoidea* and *Caytonia*).

Reference Books:

1. Robert Edwardlee, 2008, Phycology, 4th Edition, Cambridge University Press, London, ISBN: 0521682770.
2. O. P. Sharma, 2011, Algae, 1st Edition, Cambridge University Press, Mcgraw Hill Education, ISBN: 0070681945.
3. Steven L. Stephenson, 2010, The Kingdom Fungi: An Introduction to Mushrooms, Molds and Lichens, 1st Edition, Timber Press, ISBN: 0881928917.
4. Himanshu Rai, Dalip K. Upreti, 2014, Terricolous Lichens in India: Volume 2: Morphotaxonomic Studies, Springer NY, ISBN: 1493903594
5. W.B Schofield, 2001, Introduction to Bryology, 1st Edition, The Blackburn Press, ISBN: 1930665261.
6. S. S. Sambamurty, 2005, A Text Book of Bryophytes, Pteridophytes, Gymnosperms and Palobotany, I K International Publishing House Pvt. Ltd, ISBN: 8188237450.
7. Pteridophytes and Gymnosperms, 2010, 1st edition, Springer, ISBN: 3642080804.
8. C. J. Alexopoulos C. W. Mims M. Blackwell, 2002, Introductory Mycology, Wiley India Pvt Ltd. ISBN: 9788126511082.
9. K. R. Sporne, 2014, The Morphology of Pteridophytes; The Structure of Ferns and Allied Plants - Primary Source Edition, Nabu Press, ISBN: 9781294843078.

Course Code	Title of the Course
34612	Plant Taxonomy

Objectives:

- To acquire the fundamental knowledge of plant systematics.
- To know about the basic concepts and principles of plant systematics.
- To know how to identify the plants.
- To create awareness of the taxonomic relationships in plant systematic studies.

Possible Outcomes of the course:

- The course will nurture the knowledge on classification of plants.
- The course will give an expertise in understanding characteristic features of various plant families.

Block-1: Scope and Applications of Plant Taxonomy:

Unit-1: Scope and applications- Species concept, Biotype, Ecad, Ecotype- Binomial System of Nomenclature.

Unit-2: Theories of Biological Classification- Structural, Biological and Molecular systematics.

Unit -3: Historical Background, Plant classification- Plant classification systems: Bentham and Hooker, Engler and Prantl, Takhtajan and Hutchinson.

Block-2: Taxonomic Structure:

Unit-4: Taxonomic structure: Biosystematics, Chemotaxonomy, Numerical taxonomy-. Modern inter-disciplinary approaches to Taxonomy.

Unit -5: Botanical Nomenclature- Need for scientific names- Principles of ICBN. Type method, author citation, Publication of names, rejection of names.

Unit-6: Principle of priority, limitations, conservation of names of species-Draft Biocode.

Block-3: Salient features of plant families:

Unit-7: Study of the Monocotyledons: *Hydrocharitaceae* and *Dioscoreaceae*

Unit-8: Study of the Monocotyledons: *Arecaceae* and *Cyperaceae*.

Unit-9: Study of the Monochlamydeae families: *Polygonaceae* and *Amaranthaceae*.

Unit-10: Study of the Monochlamydeae families: *Aristolochiaceae* and *Loranthaceae*.

Block- 4: Salient features of plant families:

Unit-11: Study of the Gamopetalae families: *Sapotaceae*, *Rubiaceae*, *Asteraceae*, *Apocynaceae*.

Unit-12: Study of the Gamopetalae families: *Convolvulaceae*, *Bignoniaceae*, *Scrophulariaceae* and *Verbenaceae*.

Unit-13: Study of the Polypetalae families: *Magnoliaceae*, *Menispermaceae*, *Papaveraceae*, *Polygalaceae*, and *Tiliaceae*.

Unit-14: Study of the Polypetalae families: *Geramiaceae*, *Mimosaceae*, *Myrtaceae*, *Meliaceae* and *Sapindaceae*.

Reference Books:

1. Anupam Dikshit, M.O. Siddiqui, Ashutosh Pathak, 2016, Taxonomy of Angiosperms: Basic Concepts, Molecular Aspects & Future Prospects, 1st Edition, Studera Press, ISBN: 9385883070
2. O. P. Sharma, 2012, Plant Taxonomy, 2nd Edition, Mcgraw Hill Education, ISBN: 0070141592
3. Yilma Dessalegn, Getachew Mekonnen, 2012, Plant Taxonomy and Systematics, LAP Lambert Academic Publishing, ISBN: 3659164739.
4. Jones and Luchsinger, 1987, Plant Systematics, 2nd Edition, McGraw Hill International Editions. New York.
5. Neeru Mathur, 2012, Taxonomy of Angiosperms, Sonali Publications, ISBN: 8184114494.
6. K.V. Krishnamurthy, 2004, An Advanced Text Book on Biodiversity – Principles and Practice, Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi. ISBN: 9788120416062.

Course Code	Title of the Course
34613	Biological Techniques in Botany

Objectives:

- To acquire the knowledge about biological techniques.
- To know about the basic concepts, principles and significance of various analytical and molecular techniques.
- To understand the various anatomical techniques.

Possible Outcomes of the course:

- The course will nurture the knowledge on biological samples especially plant samples.
- The course will give an expertise in understanding the various important biological techniques to be employed in the field of botany.

Block-1: Microscopy:

Unit-1: Principles, image formation and applications of Light, Polarizing Microscopy.

Unit-2: Transmission and Scanning electron microscopes - Confocal Microscopy, Phase Contrast Microscopy. Photomicrography- Digital imaging.

Unit-3: Microscopic measurements- Micrometers – Ocular, Stage, Haemocytometer and Camera lucida.

Block-2: Microtomy:

Unit-4: Microtomes- Rocking, Rotary, Sledge and Ultra microtomes and their uses.

Unit-5: Material preparation techniques for microtome sectioning - fixatives, dehydrating agents, killing, fixing methods.

Unit-6: Stains and their uses and staining of plant tissues- Clearing, Mounting and mountants.

Block-3: Histochemical studies:

Unit-7: Histochemical techniques – staining of Proteins, Carbohydrates, Lipids and enzymes.

Unit-8: Microslide preparation—Whole mounts, Smears, Squashes.

Unit-9: Sectioning of Biological specimens- Free hand, Hand microtome, sludge and rotary microtome sectioning, Embedding methods.

Unit-10: Dewaxing and staining of the sections, fixing coverslips and ringing.

Block-4: Maceration, Separation Tracer and Blotting Techniques:

Unit-11: Maceration technique- PAGE, SDS – PAGE and Agarose gel electrophoresis. Isoelectric focusing. 2D Electrophoresis.

Unit-12: Separation technique -Ultracentrifugation- TLC, HPLC, HPTLC, FPLC, GC, MS, MALDI Tof.

Unit-13: Tracer techniques- Principles and applications of radioactive isotopes, Autoradiography and Liquid scintillation spectrometry.

Unit-14: Blotting techniques -Principles and techniques of Southern, Northern and Western blotting techniques and hybridization. Principles and applications of PCR, RFLP, RAPD, AFLP and DNA fingerprinting.

Reference Books

1. D.K. Singh, 2013, Principles and Techniques in Histology, Microscopy and Photomicrography, CBS Publishers.
ISBN: 9788123909509.
2. R. Mortin, 1996, Gel Electrophoresis: Nucleic Acids (Introduction to Biotechniques), Garland/ BIOS Scientific Publishers. ISBN: 9781872748283.
3. A. S. Sameer, 2011, Molecular Biology and Biotechniques, VDM Verlag, ISBN: 9783639324990.
4. S.K. Dewab, 2012, Organic Spectrosopy (NMR IR MASS and UV), CBS Publishers, ISBN: 9788123919065.

Course Code	Title of the Course
34614	Practical – Lab I: Plant Diversity, Plant Taxonomy and Biological Techniques in Botany

Suggested Laboratory Exercises:

1. Morphological study of representative member of Algae: *Microcystis*, *Oocystis*, *Pediastrum*, *Hydrodityon*, *Ulva*, *Pithophora*, *Stigeoclonium*, *Drapranaldiopsis*, *Closterium*, *Cosmarium*, *Chara*.
2. Morphological study of representative member of fungi: *Albugo*, *Mucor*, *Pilobolus*, *yeast*, *Polyporus*, *PeniCillium*, *Aspergillus*, *Colletotrichum*.
3. Identification of fungal cultures: *Rhizopus*, *Mucor*, *Aspergillus*, *Penicillium*, *Chaetomium*, *Curvularia*, *Fusarium*.
4. Study of morphological and internal structures of representative genera of fruticose, foliose, and crustose lichen.
5. Morphological study of representative member of bryophytes and pteridophytes: *Marchantia*, *Anthoceros*, *Polytrichum*, *Psilotum*, *Lycopodium*, *Selaginella*, *Equisetum*, *Ophioglossum*, *Isoetes*, *Lygodium*, *Regnellidium* and *Marsilia*
6. Study of morphology, anatomy and reproductive structures of bryophytes.
7. Study of complex tissues viz. Xylem and Phloem, Tracheids, Vessels and Sieve tubes and Companion cells.
8. Comparative study of the wood anatomy and vegetative and reproductive parts of *Cycas*, *Ginkgo*, *Cedrus*, *Abies*, *Picea*, *Cupressus*, *Araucaria*, *Cryptomeria*, *Taxodium*, *Podocarpus*, *Agathis*, *Taxus*, *Ephedra* and *Gnetum*.
9. Study of the living gymnosperms in the botanical garden of the university.
10. Study of important fossil gymnosperms from prepared slides and specimens.
11. Monographic study of the living gymnosperms.
12. Description of a specimen from representative, locally available families.
13. Description of a species based on various specimens to study intraspecific variation a collective exercise.
14. Description of various species of a genus; location of key characters and preparation of keys at generic level.
15. Location of key characters and use of keys at family level.
16. Field trips; compilation of field notes and preparation of herbarium sheets.

17. Training in using floras and herbaria for identification of specimens described in the class.
18. Demonstration of the utility of secondary metabolites in the taxonomy of some appropriate genera.
19. Comparison of different species *of* a genus and different genera of a family to calculate similarity coefficients and preparation of dendrograms.
20. Microscopic measurement practices using Micrometers, Haemocytometer and Camera lucida.
21. Microprepartaions of plant materials.
22. Microtomy, microslide preparations.
23. Staining for Proteins, Carbohydrates, Lipids and enzymes.
24. Demonstration of PAGE, Agarose gel electrophoresis.
25. Demonstration of PCR and blotting techniques.

SECOND SEMESTER

Course Code	Title of the Course
34621	Cell Biology, Genetics and Plant Breeding

Objectives:

To explore the cellular structure and inclusions of the cell.

- To understand about genetics and inheritance of traits.
- To realize the significance of plant breeding techniques in improving the plant productivity and strain improvement.

Possible Outcomes of the course:

- The course will impart the wisdom about structure and function of the cells, cell organelles.
- The course will give a detailed account on fundamentals and application of genetics
- The course will give a scientific approach to plant breeding techniques and their significances.

Block-1: The Cell:

Unit-1: Structure of Prokaryotic and Eukaryotic cell.

Unit-2: Structure and function of Nucleus, Endoplasmic Reticulum, Golgi complex, Mitochondria, Chloroplast and Lysosomes.

Unit-3: Architecture of Nucleus and nuclear transport.

Unit-4: Architecture and functions of Cytoskeleton networks (Microfilaments, Intermediate filaments and Microtubules).

Block-2: Assembly and Functions of Cellular Membranes:

Unit-5: Biological Membrane – Structure (lipid bilayer, membrane proteins) - Assembly and basic functions, Transport of ions and molecules across the membranes.

Unit-6: Protein sorting in mitochondria, chloroplast, endoplasmic reticulum and nucleus. **Unit-7:** Protein processing and trafficking from Endoplasmic reticulum to Golgi- Cell division and Cell cycle.

Block-3: Genetics:

Unit-8: Basic account on Mendelian Genetics and Gene interaction, Linkage, crossing over, Gene mapping.

Unit-9: Sex linkage, Cytoplasmic inheritance, male sterility, Origin, induction and applications of prions.

Unit-10: Polyploidy – Types, and their origin, Significance of polyploids.

Unit-11: Basic account on mutation (Causative agents, induction and types)- Basic account of population genetics (Hardey Weinberg's Law).

Block-4: Plant Breeding:

Unit-12: Objectives of plant breeding, Genetic variability and its role in plant breeding.

Unit-13: Breeding methods in self pollinated, cross pollinated, vegetatively propagated and apomictic plants.

Unit-14: Inbreeding depression theories- Hybrid vigour in plant breeding- Mutation breeding and breeding for disease resistance and stress tolerance.

Reference Books:

1. S. C. Rastogi, 2012, Cell Biology, 3rd Edition, New Age International, ISBN: 8122416888.
2. S. P. Vyas, A. Mehta, 2011, Cell and Molecular Biology, 1st Edition, CBS Publisher, ISBN: 8123919654.
3. P. S. Verma and A. K. Agarval, 2004, Cell Biology, Genetics, Molecular Biology, Evolution and Ecology, S. Chand Publishing, ISBN: 8121924421.
4. William S. Klug, Michael R. Cumming, Charlotte A. Spencer, Michael A. Palladino, 2016, Concepts of Genetics, 10th Edition, Pearson Education, ISBN: 9332577463.
5. J. E. Bradshaw, *et al.*, Root and Tuber Crops (Handbook of Plant Breeding), 2010, 1st Edition, Springer-verlag Gmbh, ISBN: 0387927646.
6. Mahabal Ram, 2014, Plant Breeding Methods, PHI Publishers, ISBN: 8120348508.
7. E.D.P. De Roberties and E. M. F. De Roberties Jr., 2010, Cell and Molecular Biology, Lippincot Williams & Wilkins, ISBN: 9788184734508.
8. J.E. Krebs, T. Kilpatrick, and E.S. Goldstein, 2014, Lewins Genes IX, Viva Books Pvt Ltd., ISBN: 9789380853710.

Course Code	Title of the Course
34622	Plant Anatomy and Embryology

Objectives of the Course:

- To study the plant anatomy which facilitate the process of understanding the internal structures of various plant parts and their significance.
- To study the development of male and female gametes, pollination and fertilization reveals the various steps involved in development of new plant.

Possible Outcomes of the Course:

- The course will illustrate anatomy of various plant parts.
- The course will make the learners understanding about various stages of development.

Block-1: Meristem, Connective tissues:

Unit-1: General account and theories of organization of meristems. Unit-2: Light and Electron microscopic structure of cell walls.

Unit-3: Structural diversity and phylogenetic specialization of xylem and phloem.

Unit-4: Distribution, structure and significance of transfer cells, Vascular cambium – storied, non-storied and the mode of activity.

Block-2: Vascular Tissues:

Unit-5: Vascular differentiation in the primary body of stem, root and leaf.

Unit-6: Root stem transition- Molecular aspects of developing vegetative organs. Unit-7: Cambial variants and floral vasculature.

Block-3: The Wood:

Unit-8: Structure, identification, classification and uses of woods. Unit-9: Physical, chemical and mechanical properties of wood.

Unit-10: Natural defects, knots, reaction wood, compression wood tension wood.

Unit-11: Molecular aspects on wood differentiation, Commercial woods of South India.

Block-4: The Developmental Biology:

Unit-12: Anther development- Pollen morphology, Pollen stigma compatibility.

Unit-13: Megasporogenesis female gametophyte- Nutrition of embryo sac-

Endosperm types.

Unit-14: Apomixis- Vegetative reproduction- Agamospermy and apospory-
Exploitation of polyembryony and apomixis in plant improvement programmes-
Molecular aspects of higher plant reproduction.

Reference Books:

1. Pandey, B.P. 2011. Plant Anatomy, 21st Edition. S. Chand & Company Ltd., New Delhi. ISBN 8121901456.
2. Katerine Esau. 2010. Anatomy of Seed Plants, 2nd Edition. Wiley India Pvt., Ltd., New Delhi. ISBN 8126508205
3. Bhojwani, S.S. and S.P. Bhatnagar 2010. The Embryology of Angiosperms, 5th Revised Edition. Vikas Publishing House Pvt Ltd. Noida. ISBN: 8125923466.
4. Sharma, H.P. 2009, Plant Embryology: Classical and Experimental. Narosa Book Distributors Pvt. Ltd., New Delhi. ISBN: 8173199698.

Course Code	Title of the Course
34623	Plant Physiology and Biochemistry

Objectives of the Course:

- To study the plant physiological processes.
- To study the bio-chemical architecture of various bio-materials and their synthesis.

Outcomes of the Course:

- The course will enlighten the students about various metabolic pathways of plants.
- The course will make the learners understanding about various enzymes and its kinetics.

Block-1: Plant-Water Relations:

Unit-1: Water transport process, diffusion, osmosis, water potential, Chemical potential,

Unit-2: Absorption of water, water transport through trachieds and xylem.

Unit-3: Transpiration and its significance, factors affecting transpiration, mechanism of stomatal movement- Water stress on crop production.

Block-2: Photosynthesis:

Unit-4: Ultra structure of photosynthetic apparatus.

Unit-5: Photochemical reaction- electron transport pathway in chloroplast membranes, photophosphorylation.

Unit-6: C4 carbon cycle- Crassulacean acid metabolism- Photorespiration.

Block-3: Respiration and Flow of Energy:

Unit-7: Glycolysis- TCA Cycle- electron transport in mitochondria.

Unit-8: Oxidative phosphorylation- pentose phosphate pathway- cyanide – resistant respiration.

Unit-9: Nutrient uptake and transport mechanism.

Unit-10: Biological nitrogen fixation, Nitrate and ammonia assimilation.

Block-4: Chemistry of Biomolecules

Unit-11: Carbohydrates- Classification, Structure of mono, di and polysaccharides, stereoisomers, enantiomers and epimers.

Unit-12: Amino acids and Proteins- Structure, characteristics and classification- amino acid synthesis- peptide bond and polypeptide chain- primary, secondary, tertiary and quaternary structure of proteins.

Unit-13: Enzymes- General aspects (Classification and structure), allosteric

mechanism, regulatory and active sites, isoenzymes, enzymatic catalysis- Michaelis-Menton equation and its significance.

Unit-14: Lipids- Classification and structure, biosynthesis of fatty acids, Oxidation of fatty acids- Nucleic acids- Composition of nucleic acids and nucleotide synthesis.

Reference Books:

1. Salisbury and Ross. 2006. Plant Physiology. CBS Publications ISBN: 9788123910437.
2. Taiz and Zeiger, 2006, Plant Physiology, MAC Publishers, ISBN: 9780878938568.
3. S.N. Pandey and Sinha, 2005, Plant Physiology, Vikas Publishing House Pvt. Ltd.. ISBN: 9788125918790.
- 4 . David Hames and Nigel Hooper, 2008, Instant Notes on Biochemistry, Tylor & Francis, ISBN: 9780415367783.
5. David L. Nelson and Michael N. Cox, 2013, Lehninger Principles of Biochemistry, Macmillon, ISBN: 9781464109621.

Course Code	Title of the Course
34624	Practical – Lab II: Cell Biology, Genetics & Plant Breeding, Plant Anatomy & Embryology, Plant Physiology and Biochemistry

Suggested Laboratory Exercises:

1. Study of different types of chromosomes
2. Preparation of karyograms.
3. Study of different stages of mitotic cell division in suitable material.
4. Study of meiotic cell division.
5. Linear differentiation of chromosomes through banding techniques such as G-banding, C-banding and Q-banding.
6. Application of colchicines in genetics.
7. Studying pea plant as tool for investigating Laws of Inheritance.
8. Demonstration of Mendel's Law of segregation.
9. Demonstration of Mendel's Law of Independent Assortment.
10. Studying deviations from Mendel's laws and applying statistics.
11. Studying *Drosophila* as model organism.
12. Effect of chemicals on mutation.
13. Effect of radiations on mutation.
14. Isolation of DNA from different sources.
15. Study of cell structure from onion leaf peels; demonstration of staining and mounting methods.
16. Comparative study of cell structure in onion cells, *Hydrilla* and *spirogyra*.
17. Study of cyclosis in *Tradescantia* staminal hairs.
18. To study the permeability of plasma membrane using different concentrations of organic solvents.
19. To study the effect of temperature on permeability of plasma membrane.
20. To prepare the standard curve of protein and determine the protein content in unknown samples.
21. Separation of chloroplast pigments by solvent method.
22. Determining the osmotic potential of vacuolar sap by plasmolytic method.
23. Determining the water potential of any tuber.
24. Separation of amino acids in a mixture by paper chromatography and their identification by comparison with standards.

25. Comparison of the rate of respiration of various plant parts
26. Protein, carbohydrate estimation
27. Estimation of Nitrogenase activity.
28. Acid and alkaline acid phosphatase activity
29. Isolation and identification of Rhizobium from leguminous plants.
30. Separation of amino acid through paper and column chromatography.

THIRD SEMESTER

Course Code	Title of the Course
34631	Microbiology and Plant Pathology

Objectives of the Course:

- To study microorganisms and scope of microbiology.
- To study about plant pathology and maintaining plant health.

Possible Outcomes of the Course:

- The course will give a detailed introduction of microorganisms and their classification.
- The course will make the learners understanding about which factor is lying behind the plant diseases and how to overcome that.

Block-1: Scope of Microbiology

Unit-1: Introduction to Microbiology – Scope of Microbiology – Evolution into science – Characterization of microorganisms.

Unit-2: Classification of microorganisms – Archea and bacteria – Characteristics of bacteria - Morphology – Ultrastructure.

Unit-3: Nutrition – Growth – Reproduction- Bacterial culture and culture characteristics – Economic importance of bacteria

Block-2: Virus and Mycoplasmas

Unit-4: Virology – General features – Classification of viruses – Characteristics – Ultrastructure

Unit-5: Virus- Isolation – Purification – Chemical nature – Replication – Transmission – Virions.

Unit-6: Prions – Phytoplasma (including mycoplasma).

Unit-7: Microbial products – Antibiotics – Enzymes – Human diseases caused by bacteria and viruses.

Block-3: Plant Pathology

Unit-8: Introduction to Plant Pathology – History - Causal agents responsible for plant diseases.

Unit-9: Types of plant diseases – Methods of studying plant diseases – Koch's postulates – Symptoms of plant diseases.

Unit-10: Etiology - Plant disease epidemics - Plant disease forecasting – Disease triangle – Disease cycle.

Block-4: Host-Pathogen Interactions and Plant Diseases:

Unit-11: Host-pathogen interactions – Defense mechanisms in plants.

Unit-12: Control measures – Cultural practices – Chemical control – Biological control - Integrated plant disease management.

Unit-13: Plant diseases- Tobacco mosaic virus – Bunchy top of banana –Blast and sheath blight of paddy – Citrus canker – Red rot of sugarcane – Downey mildew of grapes

Unit-14: Plant diseases – Late blight of potato – Leaf spot diseases of groundnut - Anthracnose of mango – Wilt of cotton – Rust of wheat.

Reference Books:

1. P. D. Sharma, 2012, Microbiology and Plant Pathology, 3rd Edition, Rastogi Publications, ISBN: 97881-7133-794-5.
2. Michael Pelczar, ECS Chan, R. Krieg, 2001, Microbiology, 5th Edition, Mcgraw Hill Education, ISBN: 074623206.
3. Allan Granoff, Robert G. Webster, 1999, Encyclopedia of Virology, 2nd Edition, Elsevier. ISBN: 0122270304.
4. H. C. Dube, 2007, A text Book of Fungi, Bacteria and Viruses, 3rd edition, Agrobios India, ISBN: 8188826383.
5. A. Bohra and A. Mishra, 2011, Plant Pathology - Disease and Management. AgroBios, Jodhpur, ISBN: 817754246X.
6. N. G. Ravi chandra, 2013, Fundamentals of Plant Pathology, Phi Learning, ISBN: 812034703X.
7. George N. Agrios, 2004, Plant Pathology, Elsevier, ISBN: 0120445654.

Course Code	Title of the Course
34632	Ecology, Biodiversity Conservation and Economic Botany

Course Objective:

To introduce various concepts in Ecology.

To introduce various components of biogeography

To create awareness on the biodiversity and importance of its conservation. To know about intellectual property rights.

To know about economically important plants.

Possible Outcomes of the Course:

- The course will give an introduction about ecosystem ecology and population ecology.
- The course will make the learners understanding about biodiversity and the necessity to conserve them.
- The course will introduce intellectual property rights and legal protection towards it.
- The course will make impart of knowledge about the economically important plants.

Block-1: Ecology:

Unit-1: Ecosystem Ecology- concept and dynamics – Abiotic and biotic components, energy input in ecosystem, Biomass, primary and secondary production.

Unit-2: Concept of food chain and food web – community organization – Concept of habitat, functional role and niche – ecotone – edge effect – ecological succession.

Unit-3: Population biology- Basic concepts –Gause's principle, survivorship curves – self- regulating mechanisms.

Unit-4: Species interaction - evolution of cooperation, inter-specific competition, competition coexistence- Negative interaction- predation, herbivory, parasitism - Positive interaction - commensalisms and mutualism.

Block-2: Biodiversity Conservation:

Unit-5: Introduction to biodiversity- Types of biodiversity, Biodiversity concepts, Centres of diversity, Agro biodiversity, Values and uses of biodiversity, Loss of biodiversity.

Unit-6: Phytogeographic zones, Vegetation types of India and Tamilnadu, Endemism, Red listed plants, Red Data Book, Threatened plants and animals of India.

Unit-7: Biodiversity act of India 2002 and 2004. General overview of plant conservation, Conservation of biodiversity - Wildlife Sanctuaries, National parks and Biosphere Reserves, Hotspot biodiversity areas in India- Sustainable use of plant genetic resources, Biotechnology assisted plant conservation (*in situ* and *ex situ* conservation).

Block-3: Intellectual Property Rights:

Unit-8: General Agreement on Trade and Tariff (GATT) and World Trade Organization, Establishment and functions of GATT and WTO, Physical and Intellectual Property.

Unit-9: Different types of intellectual property rights (IPR) - Patents, Trade mark, Trade secret and Copy right.

Unit-10: Plant biotechnological examples of patents, trademark, trade secret and copyright. Plant breeder's rights.

Unit-11: Flavr Savr™ tomato as a model case for GM food, Case studies on patents (Basmati rice, Neem and Turmeric.), General guidelines for research in transgenic plants.

Block-4: Economic Botany:

Unit-12: General account on economic botany Origin and History, Botanical description, Cultivation and uses of Spices and Condiments: Ginger, Pepper, Cardamom, Clove, Nut- Meg, Chilly, Coriandrum, Turmeric.

Unit-13: Origin and History, Botanical description, Harvesting, Extraction and uses of Fatty oils and Vegetable Fats: Sun flower, Soya bean, Peanut, Palm Oil, Coconut and Gingly. Fibers and Timber: Cotton, Jute, Sun hemp, Teak, Rosewood, Ebony, Sal and Mahogany.

Unit-14: Ethnobotany -Origin and History, Botanical description, Cultivation, Processing and uses of - Medicinal Plants: Rauwolfia, Aconitum, Jatamansi, Sathavari, Goggul, Basil, Saraca and Neem.

References Books:

1. James P. Kimmins, 2003, Forest Ecology 3rd edition Benjamin Cummings Publisher. ISBN: 0130662585.
2. Peter Stiling, 2001, Ecology – Theories and applications ISBN: 013091102X.
3. Jessica Gurevitch, 2006, The Ecology of Plants Sinauer Associates; 2nd edition ISBN: 0878932941.
4. D.L. Hawskworth, 2009, Methods and Practice in Biodiversity Conservation,

Springer, ISBN: 9789048138487.

5. Biber-Klemm and T. Cottier, 2006, Rights to plant genetic resources and traditional knowledge: Basic issues and Perspectives, Cabi Publication, ISBN: 9780851990330.
6. Sambamurthy, 2008, A Textbook of Modern Economic Botany, 1st edition, CAS publishers & Distributors Pvt, Ltd, ISBN: 8123906293.
7. Ashwin Dutt, 2008, Economic Botany, 1st edition, Aahyayan Publishers & Distributors, ISBN: 8184350694.
8. Gary W. Barrett, Murray Barrick and Eugene Odum, 2005, Fundamental of Ecology, Cengage Learning, ISBN: 9788131500200.

Course Code	Title of the Course
34633	Algal Technology and Mushroom Technology

Objectives:

- To give introduction about values of algae.
- To understand about micro and macro algal distribution, cultivation, and their economic importance.
- To reveal the importance and cultivation methods of mushroom.

Possible Outcomes of the course:

- The course will give a clear picture on distribution, availability and utilization of various kinds of algae belongs to both fresh water and marine habitats.
- The course will train the students to promote mass cultivation of algae and improve the livelihood of the fishermen community through providing alternative employment.
- The course will make the learners skilled in cultivation, harvesting and processing of mushroom.

Block-1: Algal Technology:

Unit-1: Economic importance of algae: Fresh water and marine algae – Macro and Micro algae – Occurrence – distribution - Cultivation – Importance of cultivation.

Unit-2: Mass cultivation techniques of microalgae- Upstream and downstream processes of algal cultivation - Spirulina, Dunaliella, Hematococcus and Botryococcus.

Unit-3: Single cell protein – bioactive compounds, industrial enzymes, biofuel and other bioproducts from algae.

Block-2: Micro and Macro Algae:

Unit-4: Micro algae used as biofertilizers – nitrogen fixing forms – free living and symbiotic nitrogen fixers – Azolla – Mass cultivation of blue green algae in field - Importance and selection of carrier materials – Immobilization technique.

Unit-5: Mass cultivation of macro algae: rope cultivation – culturing in the laboratory – Applications of seaweeds in biotechnology.

Unit-6: Seaweed liquid fertilizers preparation and their potential in agriculture and horticulture.

Unit-7: Genetics of algae – *nif* genes – strain improvement – transformation – protoplast fusion technique for macro algae.

Block-3: Mushroom Technology:

Unit-8: Introduction to mushroom cultivation – History – scope of edible

Mushroom – Types of edible mushroom available in India – Medicinal and other uses - Poisonous mushroom.

Unit-9: Pure culture – preparation of medium (PDA and Oatmeal Agar medium) Sterilization – preparation of test tube slants.

Unit-10: Spawn preparation: Spwan substrate, Mother spawn in saline bottle – Inoculation, incubation, storage and transportation of spawn – Quality of spawn and contaminants.

Unit-11: Preparation of compost and cultivation of white button mushroom (*Agaricus bisporus*)- Cultivation of paddy straw mushroom (*Volvariella volvacea*) and oyster mushroom (*Pleurotus spp.*) - Low cost mushroom farm design of production.

Block-4: Storage and Values of Mushroom:

Unit-12: -Factor affecting mushroom cultivation (Temperature, pH, air and water management) - Insects and pest attacking mushroom – fungal, bacterial, viral diseases.

Unit-13: Packing and preservation techniques for mushroom - Storage -short-term storages, long term storages, drying, storages in salt solution,

Unit-14: Nutrition- nutritive value – amino acids, mineral elements – carbohydrates, crude fiber – vitamins-Cost benefit ratio – Marketing in India and abroad, export value.

Reference Books:

1. Faizal, B. and Yusuf, C. 2016. Algal biotechnology: Products and processes. Springer. ISBN: 3319123335.
2. Sharma, O.P, 2011. Algae. McGraw Hill Education (India) Private Limited. ISBN: 0070681945.
3. Demirbas, 2010, Algae Energy, 1st Edition, Newnes Publisher, ISBN: 1849960496
4. Pathak. V. N, 2011. Mushroom Production and Processing Technology. 1st Edition. Agrobios (India). ISBN: 8177540068.
5. Suman, B.C, Sharma, V.P, 2007. Mushroom Cultivation in India. Daya Publishing House, ISBN: 817035479X.

Course Code	Title of the Course
34634	Practical – Lab III: Microbiology & Plant Pathology, Ecology, Biodiversity Conservation, Economic Botany, Algal Technology and Mushroom Technology

Suggested Laboratory Exercises:

1. Gram staining of bacteria.
2. Sterilization methods, preparation of media and stains.
3. Symptomology of some diseased specimens: White rust, downy mildew, powdery smuts, ergot, groundnut leaf spot, red rot of sugarcane, wilts, paddy blast, bacterial blight of paddy, angular leaf spot of cotton, tobacco mosaic, little leaf of brinjal, sesame phyllody, mango malformation (based on availability).
4. Preparation of different media for the isolation and culture of fungi from soil and diseased materials
5. Isolation of bacteria from diseased plant specimen.
6. Collection and study of the crop diseases from the local and out station fields.
7. Demonstration of the production of cell wall degrading enzymes.
8. Demonstration of the production of mycotoxins.
9. Culture and study of some common plant pathogenic fungi.
11. Study of minimal size of the quadrat by Species- Area Curve method for studying the forest and grassland vegetation.
12. To determine minimal number of quadrats by Species –Area Curve method in forest and grassland.
13. Sampling of the grassland vegetation by quadrat method for determining the density, frequency and basal cover of different species.
14. To determine diversity indices (Shannon-Wiener, concentration of dominance, species richness, equitability and B-diversity) for protected and unprotected grassland stands.
15. To estimate IVI of the species in a woodland using point centred quarter method.
16. To determine gross and net phytoplankton productivity by light and dark bottle method.
17. To determine soil moisture content, porosity and bulk density of soils collected for varying depths at different locations.
18. To determine the water holding capacity of soils collected from different locations.
19. To determine percent organic carbon and organic matter in the soils of cropland, grassland and forest.

20. To estimate the dissolved oxygen content in fresh waters by azide modification of Winkler's method.
21. To estimate rate of carbon dioxide evolution from different soils using soda lime or alkali absorption method.
22. Isolation and cultivation of fresh and marine water algae.
23. Cultivation of Spirulina, Azola.
24. Immobilization of algae and use of algae as biocarrier.
25. Preparation of seaweed liquid biofertilizers.
26. Survey of mushrooms.
27. Isolation and pure culture of edible mushrooms.
28. Spawn preparation for the growth of mushrooms.
29. Mass cultivation of edible mushrooms.
30. Value added food preparation from mushroom.

FOURTH SEMESTER

Course Code	Title of the Course
34641	Plant Molecular Biology

Objectives of the Course:

- To study about molecular aspects of plants.
- To study about manipulation at molecular level for the strain improvement of the plants.
- To study about molecular pharming.

Possible Outcomes of the Course:

- The course will give knowledge about plant genome organization.
- The course will make the learners understanding about various methods of molecular manipulation.
- The course will make the leaners understanding about the production of transgenic plants and molecular pharming.

Block-1: Plant Genome Organization:

Unit-1: Plant genome organization – Nucleus, Chloroplast and Mitochondria, Structural features of a typical plant gene- Chromatin organization in plants.

Unit-2: Nucleus-encoded and chloroplast-encoded genes for chloroplast proteins- Targeting of nuclear encoded cytoplasmic proteins to chloroplast compartments.

Unit-3: Mitochondrial genome and Cytoplasmic male sterility- Seed storage proteins – Classification and functions.

Unit-4: Regulation of gene expression in plant development- Plant hormones- Plant transposons.

Block-2: Plant Genetic Engineering:

Unit-5: Introduction to Plant Genetic Engineering- Tools of genetic engineering- General Methodology.

Unit-6: Selectable markers – Types and their role in plant transformation- Antibiotic sensitivity assay- Reporter genes – Types and role in optimizing transformation- Promoters used in plant vectors.

Unit-7: Plant transformation techniques – Direct (chemical, mechanical and electrical) and Indirect methods (Agrobacterium mediated)-Mechanism of T-DNA

transfer to plants-

Unit-8: Types of Ti-plasmid based vectors (Co integrate and binary vectors) for plant transformation, Agro infection, Symbiotic nitrogen fixation in legumes by Rhizobia.

Block- 3: Transgenic Plants

Unit-9: Plant genetic engineering for herbicide resistance- Abiotic stress tolerance.

Unit-10: Insect pest resistance (Bt and proteinase inhibitor)- Cytoplasmic male-sterility- Virus resistance (Antisense RNA approach, Cross protection Satellite RNA, Ribozymes and Coat protein mediated protection)- delays of fruit ripening and resistance to fungi and bacteria.

Unit-11: Case studies - Golden rice, Flavr Savr®, Chloroplast engineering and Transplastomic plants.

Block- 4: Molecular Markers; Molecular pharming:

Unit-12: Molecular markers – STS, Microsatellites, RAPD, SCAR (Sequence Characterized Amplified Region) and AFLP for genetic diversity.

Unit-13: Molecular pharming – Introduction, Transgenic plant derived products for commercial applications,

Unit-14: Bioremediation through plants. Tagging, mapping and cloning of plant genes.

Reference Books:

1. H. S. Chawla, 2009, Introduction to Plant Biotechnology, 3rd Edition, Oxford and IBH Publishing Co. Pvt. Ltd. ISBN: 978-81-204-1732-8.
2. Peter J. Lea, Richard. C. Leegood, 1999, Plant Biochemistry and Molecular Biology, 2nd Edition, John Wiley and Sons.
3. J. Hammond, P. McGarvey and V. Yusibov (Eds), 2000, Plant Biotechnology-New Products and Applications. Springer-Verlog, ISBN: 978-3-540-66265-5.
4. Maarten J. Chrispeels and David E. Sadava, 2000, Plants, Genes and Agriculture, Jones and Barlett Publishers. ISBN: 0763715967.
5. Adrian Slater, Nigel W. Scott and Mark R. Fowler, 2003, Plant Biotechnology: The Genetic Manipulation of Plants, Oxford University Press.

Course Code	Title of the Course
34642	Biostatistics, Biophysics and Bioinformatics

Objectives of the Course:

- To study about basics of statistics and utilization of statistical method in biology.
- To study about physical properties of biomaterials.
- To study about modern tools of bioinformatics an inter-disciplinary subject to help the biologists in research perspectives.

Possible Outcomes of the Course:

- The course will give knowledge about data collection, processing and interpretation of biological samples through statistical methods.
- The course will make the learners understanding about basic physical property of biological materials.
- The course will give knowledge about modern tools of bioinformatics.

Block-1: Biostatistics:

Unit-1: Data collection and interpretation- Types of population - sample – non probability sampling techniques - random sampling techniques.

Unit-2: Choice of sampling methods-sampling and non-sampling errors- Diagrammatic and graphical representation of data.

Unit-3: Measures of central tendency: Mean - median - mode. Measures of dispersion: Range - mean deviation - standard deviation.

Unit-4: Test of significance: Null hypothesis - alternate hypothesis - confidence interval -level of significance - p value - S.E of mean - S.E of standard deviation - Z test - t test - chi square test.

Block-2: Biophysics

Unit-5: Bioenergetics- Energy and work- Laws of Thermodynamics-Energy transductions in biological systems.

Unit-6: Redox potential, Redox couples, ATP bioenergetics, Order of reactions.

Unit-7: Photobiology: Dual nature of light, characteristics of solar radiation, solar energy.

Unit-8: Efficiency of atoms - Absorption spectra in molecules, energy states, De-excitation.

Block-3: Bioinformatics-Data Retrieval:

Unit-9: Bioinformatics - introduction - biological data bases - nucleotide sequence data

bases, protein sequence data bases, specialized sequence data bases.

Unit-10: Data retrieval and analysis, sequence and retrieval system.

Unit-11: Sequence alignment - sequence similarity searches, amino acid substitution matrices,

Block-4: Data base search; Sequence alignment; Phylogenetic analysis:

Unit-12: Data base searches - FASTA, BLAST - PSI BLAST.

Unit-13: Multiple sequence alignment – Clustal W:

Unit-14: Phylogenetic analysis, PHYLONET- Phylogenetic tree.

Reference Books:

1. Bernard Rosner, 2010, Fundamentals of Biostatistics, 7th Edition, Cengage Learning, Inc, ISBN: 0538733497.
2. Rodney Cotterill, 2014, Biophysics: An Introduction, Wiley India Private Limited, ISBN: 8126551607.
3. Rastogi, 2008, Bioinformatics: Methods and Applications : Genomics, Proteomics and Drug Discovery, 4th edition, PHI Learning Private Limited, New Delhi, ISBN: 8120347854.
4. Pranav Kumar, 2014, Biophysics and Molecular Biology, Patfinder Publisher, ISBN: 938047315X.
5. R. Perl, 2014, Building Bioinformatics Solutions, 2nd edition, Oxford university, ISBN: 9780199658558.

Course Code	Title of the Course
34643	Horticulture and Plant Tissue Culture

Objectives of the Course:

- To learn about horticulture.
- To acquire the fundamental of plant tissue culture techniques.
- To know about the basic concepts and principles of plant tissue culture.
- To learn about various types of gardening and maintenance of the same.

Possible Outcomes of the Course:

- The study of horticulture gives knowledge about the art, science, technology and business of growing plants.
- The course will make the learners knowing about micro propagation technique towards development of disease-free plants.

Block-1: Horticulture:

Unit-1: Scope of horticulture - relation to agriculture, agronomy and forestry - Divisions of horticulture.

Unit-2: Climate, soil and nutritional needs- Importance of macro and micronutrients,- different types of soil- Sterile soil mixtures (vermiculite, perlite, etc.).

Unit-3: Different types of organic manure's and inorganic fertilizers - Water irrigation; advanced irrigation system such as drip, microtube and sprinkler systems.

Block-2: Biological Components of Horticulture:

Unit-4: Growth and Development- Seed dormancy, viability and germination-Vegetative and reproductive growth of plants.

Unit-5: Native and synthetic hormones and other growth regulators- their importance in horticulture, gardening and landscaping.

Unit-6: Vegetative propagation using stem, leaf and root cuttings- Propagation by division and layering, bulbs, corms, tubers and rhizomes-budding and grafting.

Unit-7: Production of seeds, their certification, storage and germplasm collection.

Block- 3: Gardening:

Unit-8: Outdoor Gardening: Principles and methods of designing outdoor garden - hedges, edges, fences, trees, climbers, rockeries, arches, terrace garden - Lawn making and maintenance.

Unit-9: Water garden - cultivation of water plants- Layout for a model college garden.

Unit-10: Indoor gardening: Foliage plants, flowering plants, hanging basket, Bonsai plants - Training and pruning.

Block-4: Plant Tissue Culture:

Unit-11: Introduction to plant cell and tissue culture- Totipotency- Sterilization techniques- Nutrient media composition and preparation of solid and liquid cultures- Establishment and maintenance of callus and suspension cultures from representative monocot and dicot plants. **Unit-12:** Micropropagation – Introduction, stages and types of explants for commercial propagation- Virus elimination-commercial importance and applications of micropropagation.

Unit-13: Plant regeneration-Organogenesis and Somatic embryogenesis. Role of hormones in regeneration- Artificial seeds-Principle and method involved in the production- Somoclonal variations-Significance, mechanism and applications.

Unit-14: Protoplast isolation - Principles and protocols, protoplast culture and fusion-Importance of protoplast fusion and applications- In vitro production of secondary plant products.

Reference Books:

1. Chadha, K. L. 2012. Hand Book of Horticulture. ICAR, New Delhi. ISBN: 89171640065.
2. Simson, S. P., and M. C. Straus 2009. Basics of Horticulture, Oxford Book Company, New Delhi. ISBN: 9380179189
3. Misra, Kumar, K and R. Kumar, 2014. Fundamentals of Horticulture, Biotech, New Delhi. ISBN: 9380179189.
4. S. S. Bhojwani and M. K. Razdan, 2004, Plant Tissue Culture: Theory and Practice, Elsevier, ISBN: 0444-816232.
5. O. L. Gamborg and G. C. Philips, 2013, Plant Cell, Tissue and Organ Culture, Springer. ISBN: 9783642489747.
6. H. S. Chawla, 2009, Introduction to Plant Biotechnology, 3rd Edition, Oxford and IBH Publishing Co. Pvt. Ltd. ISBN: 9788120417328.

Course Code	Title of the Course
34644	Practical - Lab IV: Plant Molecular Biology, Biostatistics, Biophysics and Bioinformatics, Horticulture and Plant Tissue Culture.

Suggested Laboratory Exercises:

1. Isolation of plant genomic DNA.
2. Isolation of total RNA.
3. Isolation of plasmid DNA from bacteria.
4. Quantification of DNA.
5. Examples of positive and negative control of gene expression.
6. Restriction and modification of DNA by using restriction enzymes and ligases.
7. Cloning vectors - pBR322, pUC18 and Col E1.
8. Biology and molecular basis of *Agrobacterium* mediated plant transformation and its applications.
9. Gene transfer methods – Biolistics ®, PEG and Electroporation.
10. Genetic Markers – RFLP and ISSR.
11. Blotting techniques: Southern, Northern and Western blotting.
12. PCR- Types of PCR- DNA foot printing, finger printing.
13. Genetically Engineered Foods.
14. Sampling of biological data.
15. Measures of central tendency.
16. Test of significance- Chi square, T-test
17. FASTA, BLAST - PSI BLAST.
18. Clustered W, PHYLODRAW
19. Sterilization of Plant Tissue Culture Media/Glassware with the help of autoclave and hot air oven.
20. Media components and composition of important culture media (MS medium).
21. Micropropagation of given plant materials – shoot and root formation.
22. Plant Growth Regulators – IAA, IBA, NAA, GA₃, 2, 4-D.
23. Somatic embryogenesis – Embryo development.
24. Another culture, pollen culture, ovule and ovary culture.
25. Cryopreservation technique.
26. Importance of macro and micro nutrients in horticulture.

27. Types of irrigation methods – drip, microtube and sprinkler systems.
28. Seed dormancy.
29. Seed viability test by Tetrazolium chloride.
30. Role of growth hormones on horticultural propagating plant.
31. Propagation methods – Layering, budding and grafting.
32. Bonsai plants.

M.Sc (Zoology)

Sr.No	Course code	Title of the Course	CIA Max.	ESE Max.	TOT Max.	C
I YEAR						
I semester						
1	35011	Animal Diversity	25	75	100	4
2	35012	Biochemistry	25	75	100	4
3	35013	Cell and Molecular Biology	25	75	100	4
4	35014	Practical Lab.I: Animal Diversity, Biochemistry and Cell and Molecular Biology	25	75	100	4
Total			100	300	400	16
II semester						
5	35021	Developmental Biology and Evolution	25	75	100	4
6	35022	Genetics	25	75	100	4
7	35023	Microbiology	25	75	100	4
8	35024	Practical Lab. II: Developmental Biology and Evolution, Genetics and Microbiology	25	75	100	4
Total			100	300	400	16
II YEAR						
III semester						
9	35031	Animal Physiology	25	75	100	4
10	35032	Immunology	25	75	100	4
11	35033	Environmental Biology	25	75	100	4
12	35034	Practical Lab. III: Animal Physiology, Immunology, Environmental Biology	25	75	100	4
Total			100	300	400	16
IV semester						
13	35041	Fisheries & Aquaculture	25	75	100	4
14	35042	Animal Biotechnology	25	75	100	4
15	35043	Biophysics, Biostatistics and Bioinformatics	25	75	100	4
16	35044	Practical Lab. IV: Fisheries and Aquaculture, Animal Biotechnology, Biophysics, Biostatistics and Bioinformatics	25	75	100	4
Total			100	300	400	16
Total			400	1200	1600	64

DETAILED SYLLABI

Objectives:

35011- ANIMAL DIVERSITY

- To study the classification and phylogeny of invertebrate and vertebrate animals.
- To understand the general characteristics and functions of the animals

BLOCK – I: CLASSIFICATION OF ANIMALS

Unit I

Introduction to the diversity of animals, Principles of classification, types of classification and Binomial Nomenclature; Linnaeus

Unit II

Species concept –Typological, Biological and evolutionary species concept.

Unit III

Taxonomic characters and theories of taxonomy- Numerical taxonomy, Cladistics and Molecular taxonomy.

Unit IV

Major divisions and subdivisions of the animal kingdom; Animal architecture- Cephalization Symmetry- Bilateral and Radial symmetry; Coelom in animals: Coelomata, Acoelomata and Pseudocoelomata.

BLOCK – II: PROTOZOA, PORIFERA, COELENTERATA AND HELMINTHES

Unit V

Protozoa: General characteristics, classification up to class level, Protozoan parasites: Entamoeba and Plasmodium.

Unit VI

Porifera: General characters and classification, Structure of *Leucosolenia*, Canal system in sponges, Spicules in sponges

Unit VII

Coelenterata: Structure of *Obelia* colony, Polymorphism in coelenterates, Corals and coral reefs.

Unit VIII

Helminth parasites – *Taenia solium*, Nematode parasites – *Ascaris* and Parasitic adaptations.

BLOCK – III: ANNELIDA, ARTHROPODA, MOLLUSCA AND ECHINODERMATA

Unit IX

Annelida: General characters, Classification up to class - Metamerism in Annelids.

Unit X

Arthropoda: General characters, Classification up to class – Larval forms of crustaceans – Adaptive radiations in Arthropoda, Harmful and beneficial insects.

Unit XI

Mollusca and Echinodermata: General characters, Classification up to class- Cephalopod as an advanced Mollusc; Larval forms of Echinodermata -Water vascular system in Echinoderms.

BLOCK – IV: VERTEBRATES

Unit XII

General characters and classification of Prochordates and vertebrates; Pisces- classification up to orders, structural and functional adaptation of fishes

Unit XIII

Amphibians and Reptiles: Definition, general characters, classification, structural and functional adaptations of amphibians and reptiles- Mesozoic reptiles – Dinosaurs.

Unit XIV

Aves: phylogeny, flight adaptation, flightless birds and migration of birds. Mammals: General characteristics of Prototheria, metatheria and eutheria; Aquatic mammals; adaptive radiation in mammals.

Reference Books:

1. David Eisenhour, Allan Larson, Susan Keen, Larry Roberts, Cleveland Hickman Jr. 2014. Animal Diversity. McGraw Hill International, Boston.
2. Barnes, R. D., 2008. Invertebrate Zoology, *Cengage Learning (Thompson), USA*
3. Ekambaranatha Iyar, E.K. and T.N. Ananthakrishnan, 1992. A Manual of Zoology, Volume II Chordata. Viswanathan & Co.
4. Hickman CP Jr., Roberts LS, Larson A, l'Anson H, Eisenhour DJ. 2006. Integrated Principles of Zoology. 13th ed. Boston: McGraw-Hill.
5. Jordan, E.L. and P.S. Verma, 2010, Invertebrate Zoology, S. Chand & Co Ltd., Ram Nagar, New Delhi.
6. Kotpal, R.L., 2015. Modern text book of Zoology, Vertebrates; Rastogi publications, New Delhi.
7. Kotpal, R.L., 2017. A text book of Animal Diversity; Rastogi publications, New Delhi.
8. Rajesh Karyakarle and Ajit Damle., 2005, Medical Parasitology Books & Allied (P) Ltd. Kolkata.
9. Ruppert, E.E., and Barnes, R.D., 2006. Invertebrate Zoology, VIII Edition. Holt Saunders International Edition
10. Russell- Hunter, W.D., 1979. Life of Invertebrates, Macmillan Publishing Company, New York.
11. Young, J. Z. 2004., The Life of Vertebrates. III Edition. Oxford university press.
12. Marshall, A.J., 1995. Textbook of zoology: vertebrates, AITBS publishers, New

Delhi.

35012 - BIOCHEMISTRY

Objectives:

- To provide an advanced understanding of the core principles and topics of biochemistry.
- To understand the structure and function of biomolecules.

BLOCK – 1: INTRODUCTION TO BIOMOLECULES UNIT - I

Carbohydrates: Functions, classification (Mono, di and polysaccharides), Structural aspects of monosaccharide, disaccharides and polysaccharides.

UNIT - II

Lipids: Classification and functions of lipids, fatty acids, essential fatty acids, Triacylglycerols, Phospholipids, Glycolipids, lipoproteins and steroids, Properties of fats and waxes.

UNIT - III

Proteins and aminoacids: Functions, structure (Primary, Secondary, tertiary and quaternary structure), Classification and properties of proteins. General structure, classification and chemical properties of aminoacids.

UNIT - IV

Nucleic acids: Functions and components of nucleic acids. Structure and nomenclature of nucleotides. Structure of DNA (Watson and Crick model), Different forms of DNA double helix and organization of DNA in the cell.

BLOCK – II: ENZYMES, VITAMINS AND HORMONES:

UNIT – V

Enzymes: Nomenclature and classification of enzymes, Active site, factors affecting enzyme activity. Mechanism of enzyme action (Lock and key model, Induced fit model, Substrate strain model).

UNIT – VI

Isoenzymes, Regulation of enzyme activity in living system, Enzymekinetcs (MM equation, Line-Weaver and Burk plot).

UNIT – VII

Vitamins: Classification of vitamins, Chemistry, sources, biochemical functions, Recommended dietary allowances (RDA), deficiency, symptoms and hypervitaminosis.

UNIT – VIII

Hormones: General classification, mechanism of action, origin and major functions of hormones - Pituitary and Gonadal.

BLOCK – III: METABOLISM

UNIT – IX

Carbohydrate metabolism: Glycolysis, Citric acid cycle, gluconeogenesis, glycogenesis, glycogenolysis, hexose monophosphate shunt, Uronic acid pathway.

UNIT – X

Lipid metabolism: Fatty acid oxidation, Ketogenesis, Biosynthesis of fatty acids, metabolism of cholesterol.

UNIT – XI

Amino acid metabolism: Amino acid pool, transamination, deamination, metabolism of ammonia, urea cycle, fate of carbon skeleton of amino acids.

UNIT – XII

Nucleotide metabolism: Biosynthesis and degradation of purine and pyrimidine ribonucleotides.

BLOCK IV: METABOLIC DISORDERS UNIT - XII

Diabetes mellitus, Diabetes insipidus, Glycogen storage diseases, ketoacidosis, Hyperlipoproteinemia, fatty liver.

UNIT – XIII

Atherosclerosis; phenylketonuria, maple syrup urine disease, glutaric acidemia type I, Carbamoyl phosphate synthetase I deficiency.

UNIT – XIV

Alcaptonuria; Lesch-Nyhan syndrome; Gout; lipid congenital adrenal hyperplasia; Kearns- Sayre syndrome; Zellweger syndrome; Gaucher's disease, Niemann Pick disease.

REFERENCES

1. Berg, J.M., J.L. Tomoczko, and L. Stryer, 2008. Biochemistry, W. H. Freeman publisher, USA.
2. Lehninger, A., Nelson, D. L., and M.M. Cox 2008. Lehninger Principles of Biochemistry, W.H. Freeman, USA.
3. Voet, D. J., J.G. Voet and C. W. Pratt, 2008. Fundamental of biochemistry: Life at molecular level, Wiley publishers, USA.
4. Biochemistry 4th edition, G. Zubay, 1998. Mc Millan Publishing Co. New York.
5. Davson and Eggleton – Principles of Human Physiology, J and A. Churchill, London.
6. David Randall, 2009. Eckert Animal Physiology, W H Freeman & Co.
7. Nielsen, S, 2000. Animal Physiology, Cambridge Univ. Press, Cambridge.
8. Horton, Principles of Biochemistry, Fourth edition, Prehall Publishers, USA.
9. RK. Murray, DK. Granner and VM. Rodwell (2006). Harper's illustrated Biochemistry Mc Graw Hill Company, Inc.
10. Rodwell (2015), Harpers Illustrated Biochemistry, 30th Edition, Mc Graw Hill Company, Inc.
11. Satyanarayana, U and Charapany, U. (2017). Biochemistry, 5th Edition, Elsevier.

35013 - CELL AND MOLECULAR BIOLOGY

Objectives:

- To give a firm and rigorous foundation in the principles of cell and molecular biology.
- To describe the fundamental process of gene expression and cellular functions.

BLOCK – I:CELL STRUCTURE

Unit I

Cell theory - Structural organization of Prokaryotic and Eukaryotic cells.

Unit II

Ultrastructure of Cell membrane, Nucleus, Chromosomes, Mitochondria.

Unit III

Endoplasmic reticulum, Golgi apparatus, Lysosomes, Ribosomes, Peroxisomes and their functions.

Unit IV

The cytoskeleton – Microtubules and Microfilaments - Cell cycle - Mitosis and Meiosis.

BLOCK – II: NUCLEIC ACIDS

Unit V

Structure and functions of DNA,Types of RNA and its function

Unit VI

Enzymes involved in Molecular Biology-DNA polymerases, RNA polymerase, Helicase, Primase, Ligase, Exonuclease and endonuclease.

Unit VII

Mechanism of prokaryotic and eukaryotic replication; machinery for replication; Synthesis of leading and lagging strands, Okazaki fragments, Difference between Prokaryotic and Eukaryotic replication.

BLOCK – III: TRANSCRIPTION AND TRANSLATION

Unit VIII

Prokaryotic transcription: Promoters, Properties of bacterial RNA polymerase, Steps: Initiation, Elongation and Termination.

Unit IX

Eukaryotic transcription: Promoters, Enhancers, Factors, properties of RNA polymerase I, II and III. Post transcriptional modification, Reverse transcription.

Unit X

Protein synthesis: Machinery, Formation of initiation complex, Translocation, Chain

elongation and Termination. Post-translational modifications

Unit XI

Cell free protein synthesis, Comparison of protein biosynthesis in prokaryotes and eukaryotes.

BLOCK – IV: REGULATIONS OF GENE EXPRESSION

Unit XII

Concept of operon – Lac and trp operons, Positive and negative control, Repressor and Inducer.

Unit XIII

Hormonal regulation of gene expression, Transcription factors, Steroid receptors; DNA binding motifs in pro- and eukaryotes

Unit XIV

Analysis of Gene expression using Molecular Methodology

Reference Books:

1. Hunter, L. E. 2009. The Process of life- An Introduction to Molecular Biology, The MIT press, USA.
2. Weaver, R.F., 2008. Molecular biology, McGraw Hill higher education, USA.
3. Becker, W, L. Kleinsmith, J. Hardin, and G. Bertoni, 2008. The world of the cell, Pearson Education, London.
4. Alberts, B., A. Johnson, J. Lewis, M. Raff, K. Roberts, and P. Walter, 2007. Molecular biology of the cell, Garland publishing Inc, New York.
5. Lodish, H, A. Berk, C.A. Kaiser, M. Krieger, M. P. Scott, A. Brtscher, H. Ploegh, and P. Matsudaria, 2007. Molecular cell biology, W. H. Freeman, USA.
6. Karp, G, 2007. Cell and molecular Biology- Concepts and Experiments, John Wiley and Sons, Inc. New York.
7. Freifelder, D, 2004. Essentials of Molecular Biology, Narosa Publishing House, New Delhi.
8. De Robertis, E.D.P. and E.M.F. De Robertis, 2006, Cell & Molecular Biology, 8th Edition, Indian Reprint.
9. Brown, T.A., 1991. Molecular Biology, Labfax, Bioscientific publishers Ltd., Oxford.
10. Benjamin Lewin, Gene VII, Oxford University Press. U.K.
11. Rastogi, S.C., 2010, Cell and Molecular Biology, Second Edition
12. Gupta, P.K., 1999, Cell and Molecular Biology, Rastogi Publications, Meerut.
13. Ajay Paul., 2011. Cell and Molecular Biology. Books and Allied Pvt, Kolkata.
14. P.S. Verma and Agarwal, 2001. Concepts of Cell Biology. S. Chand & Co.
15. Helen Kreuzer, An Introduction To Cell And Molecular Biology: Concepts And Experiments, Published October 22nd 2013 by Wiley.

Outcome:

The students will acquire fundamental ideas on organization and functions of the different cell organelles, molecular basis of cellular processes and interrelationship with special emphasize on prokaryotic and eukaryotic systems.

LAB - I: 35014: ANIMAL DIVERSITY, BIOCHEMISTRY, CELL AND MOLECULAR BIOLOGY

ANIMAL DIVERSITY

1. **Museum specimen:** Invertebrates and vertebrates: Phylum wise (at least one from each phylum)
2. **Mounting:** Earthworm – Body and pineal setae, Honey bee – sting apparatus, Cockroach – Mouth parts, Prawn – Appendages and Shark - Placoid scales
3. **Dissections:** Understanding the anatomy of frog using an appropriate software package (CarolinaTM Biolab^R – Frog), Dissection of cockroach: Digestive, reproductive & nervous systems. Dissection of available fish: General anatomy (Viscera)

BIOCHEMISTRY

1. Preparation of solutions: Molarity, Normality and Percentage.
2. Buffer preparation and Determination of pH.
3. Estimation of glucose and total protein.

CELL AND MOLECULAR BIOLOGY

1. Cell organelles from slide preparation/images.
2. Buccal mucosal epithelium – Smear preparation to detect Barr bodies.
3. Isolation and detection of DNA from gel electrophoresis (Demo only).
4. Onion root tip – Squash preparation and study of mitosis.
5. Grasshopper testis - Squash preparation and study of meiosis (Demo only).
6. *Chironomus* larva - Squash preparation of giant chromosome.
7. Separation of amino acid by paper chromatography.
8. Separation of protein by electrophoresis - SDS and Native PAGE.

Reference Books:

1. Amsath A., 2010. Practical Manual in Zoology.
2. Amsath, A. 2013. Practical manual in Zoology. MMA Publications, Adirampattinam.
3. Shivraja Sankara, 2008. Laboratory Manual for Biochemistry.
4. David A Thompson., 2011. Cell and Molecular Biology Lab Manual.
5. Helen Kreuzer, An Introduction To Cell And Molecular Biology: Concepts And Experiments, Published October 22nd 2013 by Wiley.
6. Jordan E.L. and Verma P.S., 2005. Invertebrate Zoology, S. Chand & co. India.
7. Joe Sambrook and David W. Rusell., 2001. Molecular Cloning: A Laboratory Manual, Cold spring harbour laboratory press, U.S.A.
8. Lundblad R. L., 2009. Practical Handbook of Biochemistry and Molecular Biology, CRC publications.

35021- DEVELOPMENTAL BIOLOGY AND EVOLUTION

Objectives:

- To understand and master in the basic concept of developmental biology and evolution of animals.

BLOCK – I: GAMETOGENESIS & FERTILIZATION

Unit I

General introduction to Developmental Biology, Spermatogenesis, Physiological maturation of sperm, Sperm structure and physiology.

Unit II

Oogenesis, Egg - size, shape, Egg membranes and organization of egg - yolk, pigments, egg cortex.

Unit III

Maturation of egg, Polarity and Symmetry, Classification of eggs.

Unit IV

Fertilization : Types and Mechanism, Monospermy and Polyspermy. Activation of egg and Egg metabolism.

BLOCK – II: CLEAVAGE AND GASTRULATION

Unit V

Types of cleavage, Factors affecting cleavage, Chemodifferentiation.

Unit VI

Blastulation, Types of blastula – Gastrulation in frog and chick, Mechanism of morphogenetic movement.

Unit VII

Metabolic and molecular changes during gastrulation; Cell motility and Differential cell affinity; Fate maps construction.

BLOCK – III: ORGANOGENESIS AND ASSISTED REPRODUCTIVE TECHNOLOGY

Unit VIII

Development of eye, brain and heart in chick. Formation of muscle and neural crest. Embryonic induction, concept of organizer.

Unit IX

Foetal membranes in chick, placenta in mammals. Origin of gene theory, Nuclear transplantation, Differential gene activation, Factors involved in teratogenesis.

Unit X

Concept of Assisted Reproductive Technology (ART) – Monitoring of ovulation phase, Super-ovulation and Cryopreservation.

Unit XI

Sperm banking, Artificial insemination, IVF, Embryo transfer and Test tube babies, Gene knock out and knock in.

BLOCK – IV: EVOLUTION

Unit XII

Lamarckism, Neolamarckism, Darwinism, Neodarwinism, Theory of natural selection, Genetic and non-genetic variations and Evolution of races to species.

Unit XIII

Evidences for evolution (Anatomical, Embryological, Physiological and Biochemical). Patterns of behavioural adaptations, Isolating mechanism and speciation.

Unit XIV

Evolution of gene families, Molecular drive, Assessment of molecular variation, human origin and migration, Phylogenetic tree at molecular level.

Reference Books:

1. Jonathan M. W. Slack, Essential Developmental Biology, 3rd Edition, December 2012, ©2012, Wiley-Blackwell.
2. Gilbert, S. F., and K. Knisely, 2009. Developmental Biology, Sinauer Associates Inc.
3. Minelli, A. 2009. Forms of Becoming: The Evolutionary Biology of Development, Princeton University Press.
4. Futuyma, D. J. (2006) Evolutionary biology, Palgrave publishers, USA.
5. Hodge, R., 2009. Developmental Biology (Genetics and Evolution). Facts on File.
6. Slack, J. M. W. 2005. Essential Developmental Biology, Wiley-Blackwell.
7. Hake S, and F. Wilt, 2003. Principles of Developmental Biology, W.W. Norton & Co.
8. Wolpert, L., R. Beddington, T. Jessell, P. Lawrence, E. Mayerowitz, and J. Smith, 2002. Principles of development, Oxford University Press, UK.
9. Twyman, R.M. Developmental Biology. Viva, New Delhi, 2008.
10. Balinsky, B.I. An Introduction to Embryology. 5th Ed., Thomas Asia Pvt. Ltd., 2004.
11. Russo, V.E.A, Brody, S., Cove, D. and Ottolenghi, S. Development: The Molecular Genetic Approach. Springer Verlag, Berlin, 1992.
12. Rao.V. Developmental Biology: A Modern Synthesis. Oxford IBH New Delhi, 1994.
13. Rastogi, V.B., Organic Evolution, 12th Ed., KedarNath Ram Nath, Meerut.
14. Brian, K. H. and Benedikt Hall, G. Strickberger's Evolution. 4th Ed., Jones and Bartlett Publishers, Inc, 2008.
15. Colbert, E.H., Morales, M. and Minkoff, E.C., 2002. Colbert's Evolution of the Vertebrates: A history of the backboned animals through time, 5th edition, John Wiley – Liss, Inc., New York.

Outcome:

On successful completion of this course students should be able to critically discuss about the concepts, principles and scope of evolution.

35022- GENETICS

Objectives:

- To study the “science of heredity” and molecular process of gene expression.
- To analyze qualitative genetic data and describe the evolution of population.

BLOCK – I: CLASSICAL GENETICS

Unit I

Definition, Terminology and Scope of Genetics - Mendel and his contribution - Hybridization techniques of Mendel.

Unit II

Mendelian principles-Monohybrid and dihybrid crosses, Simple mendelian traits in Man.

Unit III

Polygenetic inheritance, Multiple alleles – Blood group inheritance in man.

Unit IV

Interaction of genes – Allelic and Non-Allelic interaction – Complementary, Supplementary, Duplicate and Epistatic interaction.

BLOCK – II: LINKAGE, CROSSING OVER AND CHROMOSOME MAPPING

Unit V

Mechanism and theories of linkage and crossing over.

Unit VI

Chromosomal and gene mapping methods. Linkage maps, Tetrad analysis, Mapping with Molecular markers and QTL mapping.

Unit VII

Structure and types of chromosome. Sex chromosomes, Sex determination in animals-human and honey bee. Heterochromatization and Barr bodies.

Unit VIII

Sex Linked inheritance, Non disjunction – Syndromes and Pedigree analysis.

BLOCK – III: MOLECULAR GENETICS

Unit IX

Mutation – Types and its applications, Chromosomal abnormalities, Inbreeding and out breeding.

Unit X

Population genetics: Hardy-Weinberg Equilibrium-gene pool, Gene frequency, Genotypic frequency and Factors affecting Hardy-Weinberg equilibrium.

Unit XI

Twin study, Eugenics, Euthenics and Euphenics.

BLOCK – IV: GENETIC CONCEPT

Unit XII

Concept of gene – Gene expression control in prokaryotes, eukaryotes, and phages.

Unit XIII

Genetic regulation in development and Role of cell death.

Unit XIV

Differential and sequential expression of genes with reference to *Drosophila*.

Reference Books:

1. Emmanuel C., Ignacimuthu S., Vincent S., 2006. Applied genetics: Recent trends and Techniques, MJP Publishers.
2. Crew F.A., 2006. Animal Genetics – The Science of Animal Breeding, Lightning Source Inc.
3. Joe Bearden H., John W. Fuquay, and Scott T. Willard., 2003. Applied Animal Reproduction, 6th edition, Prentice Hall.
4. Richard M. Bourdon, 1999. Understanding Animal Breeding, 2nd Edition, Prentice Hall.
5. Terence A. Brown., 1998. Genetics: a molecular approach, Thrones Publishers.
6. Benjamin Pierce, 2007. *Genetics a conceptual approach*, W.H. Freeman & Company, USA
7. Hartwell L., 2004. Genetics from genes to genomes, McGraw-hill, USA.
8. Gahalain S. S., 2004. Fundamentals of Genetics, Anmol Publications Pvt., India.
9. Burton S. Guttman, Anthony Griffiths, David T. Suzuki., 2002. *Genetics: A Beginner's Guide*, One world Publications Epz.
10. Verma, P.S. and V.K. Agarwal, 2009, Genetics, Revised Edition, S. Chand & Co., New Delhi.
11. Gardner, E.J, Simmons, M.J. and Snustad, D.P., 2007. Principles of Genetics 7th Ed., John Wiley India.
12. Sudbery, P., 2009. Human Molecular Genetics. 2nd Ed., Dorling Kindersley (India) Pvt. Ltd.
13. Snustad, D.P. and Simmons, M.J., 2012. Genetics. VI Ed., John Wiley & Sons, Singapore.
14. Russel, P.J., 2006. iGenetics: A Molecular Approach. 2nd Ed., Pearson Education.
15. Strickberger, M.W., 2008. Genetics, MacMill Publishing.
16. Singh, B.D., 2003. Genetics, Kalyani Publishers, Ludhiana.
17. Bruce R. Korf, Mira B. Irons, Human Genetics and Genomics, Includes Wiley E- Text, 4th Edition, January 2013, Wiley-Blackwell

Outcome:

The students will understand the basic concepts of mendelian, molecular, evolutionary and applied genetics.

35023- MICROBIOLOGY

Objectives:

- To inculcate knowledge on fundamentals of microorganisms.
- To learn the structural organization, morphology and reproduction of microbes.
- To know the principles of Microscopy and advancements in Microscopy.

BLOCK – I: INTRODUCTORY MICROBIOLOGY

Unit I

Introduction to Microbiology, Haeckel's three-kingdom concept, Whittaker's Five-kingdom concept, Three-domain concept of Carl Woese.

Unit II

Classification of Bacteria according to Bergey's Manual.

Fungi: Classification of fungi based on Alexopoulos system. General Characteristics of Fungi, Industrial uses of Yeast and Moulds. Lichens - Structural organization and their properties.

Unit III

Viruses: ICTV system of classification, General properties, Morphology and ultra-structure of virus (RNA, DNA).

BLOCK – II: MICROSCOPY, METHODS, NUTRITION AND MICROBIAL GROWTH

Unit IV

Principles and their applications of Simple, Compound, Fluorescent, Electron microscopes.(SEM & TEM) and Confocal microscopes.

Unit V

Stains and staining techniques: Simple, Differential and Structural staining methods, Imaging techniques.

Unit VI

Preservation methods of microbes for storage and microscopic studies, Culture collections, Sterilization and disinfection

Unit VII

Auxenic and Synchronous culture, Aerobic and Anaerobic Culture media and Nutritional types. Growth curve, Generation time and growth kinetics. Factors influencing microbial growth.

Block – III:General characteristics of bacteria,algae and Protozoa

Unit VIII

Prokaryotic cell structure & Organization: Cell membrane, Plasma membrane, Cytoplasmic matrix, Inclusion bodies, Ribosome, Nucleiod, Prokaryotic cell wall, Capsule, Slime layers, S layers, Pili and Fimbriae, Flagella and Motility.

Unit IX

Classification of Algae based on Fritsch system – General characteristics of Micro and Macroalgae - Biological and Economic importance.

Unit X

Protozoa –General characteristics, Importance of *Entamoebahistoltytica* and *Plasmodium* sp.

BLOCK – IV: MOLECULAR TECHNIQUES FOR IDENTIFICATION, INFECTIOUS DISEASES

Unit XI

Molecular Taxonomy, 16S/18S rRNAs and its importance in identification of microorganisms.

Unit XII

Phylogenetic tree, Types and construction of Phylogenetic tree, Molecular tools in assessing microbial diversity.

Unit XIII

Metagenomics - Sequencing methods, Data Analysis and applications.

Unit XIV

Bacterial Diseases (Tuberculosis, Typhoid, Leprosy) Viral diseases (Hepatitis, HIV, Ebola)

Reference Books:

1. Tortora, G.J., Funke B.R, and Case C.L. (2010). Microbiology an Introduction (10th Edition), Benjamin Cummins, USA.
2. Dubey, R.C. and Maheswari, D.K. (2013). A Textbook of Microbiology (Revised Edition), S.Chand and Company Ltd., New Delhi.
3. Prescott, L.M., Harley, J.P. and Klein, D.A. (2014). Microbiology (9th Edition), McGraw Hill Publishers, Boston.
4. Brock, T.D., Smith, D.W. and Madigan, M.T. (2002). Biology of Microorganisms (Fourth Edition) Prentice Hall International, London.
5. Stanier, R.Y., Ingraham, J.L., Wheels, M.L. and Painter, P.R. (1999). General Microbiology, Mac Millan Educational Limited, London.
6. Boyd, R.F. (1998). General Microbiology, MosbyCollege Publishing, St. Louis.
7. Nester, E.W., Roberts, C.V. and Nester, M.T. (1995). Microbiology, A Human Perspective. IWOA, U.S.A.
8. Pelzcar, M.J., Chan, E.C.S. and Kreig, N.R. (2001). Microbiology, McGraw Hill Inc., New Delhi.
9. Hogg, S. Essential Microbiology. John Wiley & Sons Ltd., England, 2005.
10. Madigan, M.T. and Martinko, J.M. Brock Biology of Microorganisms. 11th Ed., Prentice Hall, U.S.A, 2006.
11. Srivastava, S.H., 1994. Advances in general Microbiology, Anmol Publications, New Delhi.

Outcome:

1. Basic knowledge on historical perspectives of microbiology.
2. Knowledge on different structure, culture conditions, growth and applications of microbes in various fields.
3. Ideas on different type of microscopes.

LAB - II: 35024- DEVELOPMENTAL BIOLOGY AND EVOLUTION, GENETICS AND MICROBIOLOGY

DEVELOPMENTAL BIOLOGY AND EVOLUTION

1. Frog: Egg, blastula and yolk plug stage.
2. Chick: Egg, 24 hrs, 36 hrs, 48 hrs, 72 hrs and 96 hrs developmental stages.
3. Placental types in Mammals.
4. Animals of evolutionary importance.
5. Analogous and homologous organs.
6. Fossils.
7. Mimicry and coloration.

GENETICS

1. Klinefelter's Syndrome, Turner's Syndrome, Down's Syndrome and Cri- Du – Chat.
2. Pedigree analysis using charts and data.
3. Human karyotyping and chromosomal abnormalities.
4. Hardy- Weinberg law & Calculation of gene frequencies for dominant and recessive traits.

MICROBIOLOGY

1. Enumeration of bacteria and fungi.
2. Pure culture and preservation of bacteria.
3. Gram Staining and Negative staining.
4. Motility of bacteria.
5. Hydrolysis of starch, gelatin and protein.
6. Antibiotic susceptibility test.

Reference Books:

1. Mary S. Tyler, 1994. Developmental Biology: A guide for experiment study.
2. Bauman R. W, and N. Dolby, 2008. Microbiology Lab Manual (3rd Edition), Pearson Custom Publishing.
3. James G Cappucino, Natalie Sherman, 2007. Microbiology: A laboratory manual, Benjamin – Cummining publications, U.S.A.
4. Melissa Ann Gibbs, 2003. A Practical Guide to Developmental Biology, Oxford University Press, USA.
5. Emmanuel C., Ignacimuthu S., Vincent S., 2006. Applied genetics: Recent trends and Techniques.

35031-ANIMAL PHYSIOLOGY

Objectives:

- To study the basic physiological principles common to humans and other animals.
- To elaborate the physical and chemical functions occur in animals tissue/organ systems.

BLOCK – I: INTRODUCTION TO DIGESTIVE, RESPIRATORY AND EXCRETORY SYSTEMS

Unit I

Definition, Divisions of physiology, Relationship of physiology with other sciences, Significance of the study.

Unit II

Digestive system in man, Physiology of digestion, Absorption and Assimilation, Gastrointestinal hormones and their control in digestion.

Unit III

Respiratory system in man, Types and mechanism of respiration-Transportation of gases, Control of respiration.

Unit IV

Excretory system of human, Structure and functions of nephron, Urine formation and its regulation.

BLOCK – II: CARDIO VASCULAR SYSTEM AND NERVOUS SYSTEM

Unit V

Blood: Composition, Haemopoiesis, formed elements, Blood volume and its regulation, Haemostasis.

Unit VI

Types of heart, Structure of human heart, Heart beat and Cardiac cycle, Blood pressure, ECR and its application.

Unit VII

Types and functions of neurons, Central and Peripheral Nervous System, Synapse and its transmission, Resting and action potential, Neuro-muscular junction.

BLOCK – III: EFFECTORS AND RECEPTORS

Unit VIII

General structure and types of muscles, Sarcomere, Ultra structure of skeletal muscle, Mechanisms of muscle contraction, Chemical changes during muscle contraction, Kymograph.

Unit IX

Physiology of vision, hearing and tactile response.

Unit X

Thermoregulation in animals. Tolerance to high temperature, cold and freezing, Physiology of hibernation and aestivation.

Unit XI

Osmo-ionic regulation in freshwater and marine fishes and crustaceans – Response to hyper and hypo-osmotic media. Adaptation to pressure in high altitude – Buoyancy.

BLOCK – IV: ENDOCRINOLOGY AND ANIMAL BEHAVIOUR

Unit XII

Endocrine glands and their hormones – Mechanism in action of hormones. Hypo and Hyper secretion of hormones (Thyroid, adrenal and pancreas) and their diseases.

Unit XIII

Neuro endocrine control of hormones, Invertebrate hormones and Hormonal control of insect metamorphosis.

Unit XIV

Biological clock, Endogenous rhythm, Circadian, Circannual and Lunar periodicities.

Reference Books:

1. Richard W. Gill, Gordon A. Wyse and Margaret Anderson., 2012. Animal Physiology 3rd edition.
2. Christopher D. Moyes, Patricia M. Schulte., 2008. Principles of Animal Physiology. Pearson Education, Inc., publishing as Benjamin Cummings, San Francisco
3. Gordon A. Wyse, Margaret Anderson., 2008. Animal Physiology, 2nd edition, Richard W. Hill.
4. Neville G. Gregory., 2005. Physiology and Behavior of Animal Suffering (UFAW Animal Welfare), 1st edition, Wiley - Blackwell.
5. McGowan, C., 2016. Animal physiotherapy: assessment, treatment and rehabilitation of animals. John Wiley & Sons.
6. R.H. Williams, 2002. Text Book of Endocrinology-W.B. Saunders.
7. Campbell, A.M. and Paradise, C.J., 2016. Animal Physiology. Momentum Press.
8. Guyton Mc. and Hall, R.T. 2011. Textbook of Medical Physiology. 12th Edition Saunders Publisher, USA.
9. Sherwood L, Klandorf H and Yancey P., 2012. Animal Physiology: From genes to organisms, Cengage Learning. 5. Prosser CL, 1991. Comparative Animal Physiology, Environmental and Metabolic Animal Physiology, John Wiley and Sons.
10. Verma P.S. and V.K. Agarwal.1992. Animal Physiology. S. Chand and Co.
11. Rastogi, S.L., 1997. Essential of Animal physiology. New Age International Publishers, New Delhi

Outcome:

The course provides a comprehensive overview of animal physiology from molecular, cellular and whole animal systems approaches.

35032 - IMMUNOLOGY

Objectives

- To understand the fundamental concepts of immune systems, innate and adaptive immunity mechanism and their response.
- To provide in-depth ideas on immunotechnology and its applications.

BLOCK – I: INTRODUCTION TO IMMUNOLOGY

Unit I

Historical perspectives and scope of immunology, Types of immune cells, Tissues and organs of immune system.

Unit VII

Lymphoid organs- structure and functions of primary and secondary.

Unit II

Molecules of immune system - Antibodies, Complement, Cytokines, Interferons - Types, sources and functions. Antigen: Classification and Epitopes.

Unit III

Elements of immune system: Hematopoiesis, T- Lymphocytes, B- Lymphocytes, Generation of Lymphocyte specificity and diversity.

Unit IV

Antigen processing and presentation, Subsets of T-Cells, Memory, Helper and suppressor cells, Myeloid cells, Major histocompatibility complex (MHC)

BLOCK –II: IMMUNITY AND IMMUNE RESPONSE

Unit V

Immunity: Types of Immunity - Innate, adaptive immunity.

Unit VI

Immune Response: Types of Immune response, Effector mechanism of humoral and cell mediated immune responses.

Unit VIII

Antibody dependent cell mediated cytotoxicity, Natural killer cells. Immunity to infections – Immunoprophylaxis, Vaccines and immunization schedule.

BLOCK – III: IMMUNE DISORDERS

Unit IX

Infectious diseases; Hypersensitivity - Types I, II, III and IV.

Unit X

Autoimmune disorders and Immunodeficiency diseases. Organ Transplantation. antibody engineering

Unit XI

Cancer: Types and nature, Immunotherapy; Immune responses against tumors and transplants.

BLOCK – IV: IMMUNOLOGICAL TECHNIQUES

Unit XII

Immunocytochemistry, Antibody generation and Radioimmuno assay.

Unit XII

Detection of molecules using Immunoblot techniques, ELISA and Vaccine development

Unit X IV

Immunoprecipitation and immunofluorescence microscopy, Acquired Immuno Deficiency Syndrome (AIDS) detection and Hybridoma technology, FACS, Immunofluorescent assay.

Reference Books:

1. Judith A. Owen, Jenni Punt, Sharon A. Stranford., 2013. Kuby Immunology, 7th edition, W.H. Freeman & Company.
2. Blaine T. Smith., 2008. Concepts in Immunology and Immunotherapeutics.
3. Kannan I., 2007. Immunology.
4. Kuby, Kindt, Goldsby and Osborne, 2007. Kuby Immunology, 6th edition, W.H. Freeman & Company.
5. David Male, Jonathan Brostoff, David B Roth and Ivan Roitt, 2006. Immunology, Elsevier.
6. Helen Chapel, Mansel Haeney, Siraj Misbah and Neil Snowden., 2006. Essentials of Clinical Immunology, Blackwell Publishing.
7. Vaman Rao., 2006. Immunology, Narosa Publishing House Pvt, Ltd.
8. Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. Roitt, 2011. Roitt's Essential Immunology. 12th Ed., Wiley-Blackwell.
9. Chakravarty, A.K. Immunology and Immunotechnology. Oxford University Press. New Delhi, 2006.
10. Janeway, C.A., 2010, Immunobiology – The Immune System in Health and Disease, Churchill Livingstone, New York.

Outcome:

The course will provide basic mechanisms, distinctions and functional interplay of innate and adaptive immunity and immunological techniques.

35033-ENVIRONMENTAL BIOLOGY

Objectives:

- To understand the dynamics of ecosystem and inter-relationship between organisms.
- To quantify the biological productivity and to restore natural ecosystem.

BLOCK – I: ECOSYSTEM

Unit I

Structure, Functions and types of ecosystem - Trophic structures, Food chains, Food web, Energy flow and Ecological pyramids.

Unit II

Abiotic factors, Soil organisms, Biological effects of light, and temperature.

Unit III

Thermal stratification, Concept of limiting factors, Shelford's law of tolerance and ecotypes - Grassland and Pond ecosystem.

BLOCK – II: MARINE ECOLOGY

Unit IV

Divisions of marine environment, Physical and chemical properties of seawater, Major and minor elements.

Unit V

Primary and secondary production, Estimation and factors influencing productivity; Adaptation of plankton, Red tide, Inter tidal and deep sea ecology.

Unit VI

Unique features of Coral Reefs, Seaweeds, Seagrasses; Mangroves and estuaries.

BLOCK – III: BIOGEOCHEMICAL CYCLE AND POPULATION ECOLOGY

Unit VII

Biosphere: Types - Hydrosphere, Lithosphere and Atmosphere.

Unit VIII

General account of complete and incomplete cycle; Gaseous cycle – Carbon, Nitrogen and Oxygen cycles.

Unit IX

Sedimentary cycle: Phosphorus and Sulphur cycles.

Unit X

The population concept, Natality, Mortality, Growth rate, Population density and Age distribution, Carrying capacity, Fluctuation and Regulation.

BLOCK – IV: COMMUNITY ECOLOGY AND ENVIRONMENTAL POLLUTION

Unit XI

Community structure, Ecotone and edge effects, Ecological niche.

Unit XII

Ecological succession, Climax community - Monoclimax and polyclimax theories.

Unit XIII

Air, Water and Soil pollution - Their biological effects - Pollution control measures; Climatic changes - Green house effects, Global warming; Bioremediation and environmental awareness.

Unit XIV

Conservation of natural resources; Biodiversity hot spots of India; Endangered and threatened species, Germplasm conservation - Environmental laws.

Reference Books:

1. Henry, M., and H. Stevens, 2009. A Primer of Ecology with R (Use R), Springer
2. Odum EP, 2008. Fundamentals of Ecology, Cengage Learning (Thompson), USA.
3. Smith, T. M., and R. L. Smith, 2008. Elements of Ecology (7th Edition), Benjamin Cummings.
4. Krebs, C. J. 2008. Ecology: The Experimental Analysis of Distribution and Abundance (6th Edition), Benjamin Cummings.
5. Clark R.S. 2001. Marine Pollution, Clarendon Press Oxford, New York.
6. Strickland, J. D. and T. R. Parsons, 1972. A practical handbook of seawater analysis. Bull of Fish. Res. Bd., No. 167, pp 310.
7. James W. Nybakken and Mark D, 2000. Bertness, marine biology: An ecological approach, Benjamin-Cummings Publishing Company.
8. Saha, T. K. (2008). Ecology and Environmental Biology. Books and Allied (P) Ltd.
9. Beckman, Daniel Beckman, Marine Environmental Biology and Conservation, Published February 13th 2012 by Jones & Bartlett Publishers

Outcome:

The course provides knowledge on ecological principles/concepts and concise critical thinking to solve problems in ecology.

LAB – III: 35034-ANIMAL PHYSIOLOGY, IMMUNOLOGY, ENVIRONMENTAL BIOLOGY

ANIMAL PHYSIOLOGY

1. Estimation of salivary amylase activity.
2. Estimation of ammonia and urea.
3. Estimation of blood chloride.
4. Determination of glucose and glycogen.
5. Estimation of oxygen consumption of fish.

IMMUNOLOGY

1. Study of lymphoid organs.
2. Haemagglutination assay.
3. Study of antibody titre values.
4. Immunodiffusion – Single / Double and Immunoelectrophoresis.
5. Blood grouping
6. Human Chorionic Gonadotropin (hCG) test

ENVIRONMENTAL BIOLOGY

1. Estimation of salinity.
2. Estimation of dissolved oxygen.
3. Mounting of plankton (fresh water / marine).
4. Animal associations.
5. Intertidal fauna.
6. Construction of a food web diagram.
7. Measurement of light intensity in water bodies using Secchi disc.

Reference Books:

1. Ghai C.L., 2007. A text book of practical physiology.
2. Turgeon, M.L. 2008. Immunology & Serology in Laboratory Medicine (Immunology & Serology in Laboratory Medicine (Turgeon)), Mosby publishers.
3. Talwar, G.P., 2006. A hand book of practical & clinical immunology, CBS publishers, New Delhi
4. Hay, F.C., O.M.R. Westwood, and P.N. Nelson, 2002. Practical Immunology, Wiley-blackwell, USA.
5. Phillip L. Watson, Arlene Westhoven, Environmental Biology Laboratory Manual, Published by Hunt Publishing Company.

35041- FISHERIES AND AQUACULTURE

Objectives:

- To familiarize basic information about fishery biology, resources, management and necessary skills to identify fish species.
- To provide technical knowledge about recent aquaculture practices.

BLOCK – I: CAPTURE FISHERY AND CHARACTERISTIC ANALYSIS

Unit I

Classification of fishes, Economically important marine and freshwater fishes with regard to their fishery potential.

Unit II

Status of Indian Capture fishery, Indigenous and modern craft and gears used for capture fisheries.

Unit III

Morphometric and meristic characters of fish, Food and feeding habits, Age and growth, Spawning and reproduction of fish.

Unit IV

Endangered species and Invasive species; Conservation and Management of Fishery Resources.

BLOCK – II: AQUACULTURE

Unit V

Definition, Status of Indian aquaculture, Types of culture based on stocking density, Cultivable organisms.

Unit VI

Farm design, Structure and construction, Pond preparation, Stocking, Water quality, Feed management, harvesting, and economics; Good Management Practices.

Unit VII

Cage culture, Pen culture, Race ways culture, Poly culture, Composite fish culture and integrated fish farming. Important finfish and shell fish disease and its control measures.

BLOCK – III: HATCHERY MANAGEMENT TECHNIQUES

Unit VIII

Types of Hatchery, Brood Stock, Induced breeding, Spawning, Hatching, Larval rearing, Post larval rearing and hatchery economics

Unit IX

Live feed culture and Good management practices in hatchery.

Unit X

HACCP concept, Biosecurity and Specific pathogen free seed production and Seed packing and transportation.

BLOCK – IV: POST HARVEST TECHNOLOGY AND FISHERY BY-PRODUCTS

Unit XI

Physical and biochemical methods to examine freshness of fish.

Unit XII

Processing methods: Freezing, Canning, Smoking, Drying and Irradiation methods of preservation of fish.

Unit XIII

Quality control: HACCP, National and International standards.

Unit XIV

Fishery by-products: fish liver oil, fish ensilage, Isinglass, chitin, leather from shark skin and other value added by –products.

Reference Books:

1. Jean T. Nolan, 2009. Offshore Marine Aquaculture, Nova Science Pub Inc.
2. Michael King, 2007. Fisheries Biology, Assessment and Management, Wiley-Blackwell.
3. Pillay, T.V.R., and M. N. Kutty, 2005. Aquaculture: Principles and Practices, Wiley-Blackwell.
4. FAO, 2012. The State of World Fisheries and Aquaculture 2012 (Manuals from the Fao Training), United Nations Publications.
5. Balachandran, K. K., 2002. Post Harvest Technology of Fish and Fish Products, Daya Publishing House.
6. Bremner, H.A, 2002. Safety and Quality issues in fish processing, Publisher: CRC,(1st edition).
7. Simon Jennings, Michel Kaiser, and John D. Reynolds, 2001. Marine Fisheries Ecology, Wiley-Blackwell.
8. Chandran, K.K., 2000. Post harvest Technology of Fish and Fishery Products, Daya Publishing House, New Delhi.
9. Andy Beaumont, Pierre Boudry, Kathryn Hoare, 2010. Biotechnology and Genetics in Fisheries and Aquaculture, 2nd Edition, Wiley-Blackwell.
10. Stefano B. Longo, Rebecca Clausen, Brett Clark, The Tragedy of the Commodity: Oceans, Fisheries, and Aquaculture, Published June 25th 2015 by Rutgers University

.Outcome:

On successful completion of this course students should be able to critically discuss the fundamental concepts of fishery biology and role of aquaculture and its applications.

35042-ANIMAL BIOTECHNOLOGY

Objectives:

- To understand the principles and application of biotechnology methods in animal.
- To understand recent techniques in animal biotechnology.

BLOCK – I: GENETIC ENGINEERING

Unit I

Over view of animal biotechnology, Basic principles of genetic engineering - Genetic engineering in animal systems.

Unit II

Vectors: Plasmid, Cosmid, Phagemids - Yeast artificial chromosome (YAC) and bacterial artificial chromosome (BAC), Shuttle vectors, Yeast vectors, Minichromosomes.

Unit III

Gene transfer methods in animals –Electroporation; Microinjection; Biolistic Particle Delivery System; Sonoporation, Optical Transfection; Protoplast Fusion, Retrovirus mediated gene transfer.

BLOCK – II: ANIMAL CELL CULTURE AND TRANSGENIC ANIMALS

Unit IV

Media requirements, preparation of media and sterilization techniques; Natural and synthetic media; Culture methods: hanging drop, suspension and monolayer culture; Primary and established cell lines.

Unit V

Characteristics of transformed cells; Methods of cell preservation- Applications of cell culture in product development and tissue repair; Bioreactors and scaling-up technologies.

Unit VI

Production and applications of transgenic animals (Fish, Mice, Sheep and Pig) and chimeras. Dolly.

Unit VII

Trangensis; transgenic animals from foetal cells; transgenic animals in Xenotransplantation, transgenic organisms to interrupt disease cycles. Artificial insemination and embryo transfer.

BLOCK – III: MOLECULAR DIAGNOSTIC TECHNIQUES AND PHEROMONES

Unit VIII

Recombinant vaccines, Subunit vaccines and live vaccines - Production of Insulin and Tissue plasminogen activator.

Unit IX

Gene therapy, somatic gene therapy and germline gene therapy; Applications of advanced techniques – Positron emission tomography–computed tomography (PET-CT), Molecular imaging. Human genome project

Unit X

Ethical Issues in Genetic Engineering and Transgenics - Current Developments; social, extrinsic and intrinsic concerns, Issue of Species Boundaries, The Legal Implications of Transgenics.

Unit XI

Embryonic and adult, hematopoietic, epithelial and mesenchymal stem cells - applications. Knock out and Knock in Technology.

BLOCK – IV BIOTECHNOLOGY IN MEDICINE

Unit XII

Isolation and purification of nucleic acids. Hybridization: Southern, Western and Northern hybridization.

Unit XIII

PCR, RFLP, RAPD, DNA finger-printing. DNA bar coding. Principles, methods and Instrumentation of DNA sequencing (Maxam and Gilbert method, Sanger's di-deoxy method and automated DNA sequencing).

Unit XIV

Pheromones in pest management – Insect and Rodent control; Pheromones in animal breeding – Conservation and management of indigenous Cow, Buffalo, Tiger and Elephant.

Reference Books:

1. Castilho L. 2008. Animal Cell Technology: From Biopharmaceuticals to Gene Therapy, Taylor & Francis.
2. Freshney, I, 2006. Culture of Animal Cells, Publisher: John Wiley & Sons Inc (sea) Pvt. Ltd.
3. Satyanarayana, U., 2006. Biotechnology, Books and Allied (P) Ltd.
4. Animal Biotechnology, M.M. Ranga, 2000. Agrobios, India.
5. Brown, T.A, 2005. Gene cloning- An introduction, 2nd &3rd ed, Chapman &Hall. Publisher: Stanley Thornes Publishers Ltd.
6. Primrose, S.B, Richard M, Twyman, R and W. Old, 2001. Principles of gene manipulation, (6th ed), Published by Wiley-Blackwell.

7. Tsai C.S, 2001. An introduction to Computational Biochemistry, Publishers: John Wiley and Sons, Inc.,
8. Cartwright, T, 2009. Animal Cells as Bioreactors (Cambridge Studies in Biotechnology), Cambridge University Press, UK.
9. Glick, B.R. and Pasternak, J.J., 2007. Molecular Biotechnology: Principles and Applications of Recombinant DNA. 3rd Ed., ASM Press, Washington.
10. Dubey, R. C., 2009, A Text Book of Biotechnology, S. Chand Co., New Delhi.
11. R. Ian Freshney, 2016. Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications. Wiley Blackwell.
12. V Kumaresan and N. Arumugam, 2014. Animal Biotechnology, Saras Publication.
13. B. Singh and S.K. Gautam, 2013. Text book of animal biotechnology. TERI press.

Outcome:

On successful completion of this course students should be able to critically discuss the applications of biotechnology in research and industry.

35043-BIOPHYSICS, BIOSTATISTICS AND BIOINFORMATICS

Objectives:

- To understand the physical laws and their role in building biomolecules.
- To provide knowledge on biophysical instruments and their application in biology.
- To provide the computational knowledge in biological applications.

BLOCK – I: BIOPHYSICS

Unit I

Introduction to Biophysics: Structure and properties of atoms and molecules-Chemical bonds

– types and properties; Polymerization of organic molecules.

Unit II

Laws of thermodynamics - principle and application; Bio-energetics- coupling of chemical reactions- Redox potential- NADP/NADPH and Free energy.

Unit III

Natural radiations – Properties of light, Absorption of light, energy states of atoms, spin property of electrons- ground state and excited state of atoms and bio-molecules – their effects.

Unit IV

Spectroscopy- principle and applications; Delayed effects of radiation and measurement of radio activity – Geiger Muller counter – Isotopes as tracers - Autoradiography.

BLOCK – II: BIOSTATISTICS

Unit V

Definition and scope of biostatistics - Collection of data -Primary and secondary data.

Unit VI

Types of sampling: Random and stratified random sampling. Types of variables: continuous and discontinuous variables, qualitative and quantitative variables.

Unit VII

Presentation of data: line and bar diagram, histogram, polygon and pie diagram.

Block – III: MEASURES OF CENTRAL TENDENCY AND MEASURE OF DISPERSION

Unit VIII

Mean, Median and mode – Dispersion: Range, variance, SD, SE and CV.

Unit IX

Probability and Hypothesis testing- Normal distribution, confidence interval and P value.

Unit X

Common statistical tools: Chi-square, 't' test, – ANOVA, Correlation and Regression analysis; statistical packages.

BLOCK – IV: BIOINFORMATICS**Unit XI**

Introduction to Bioinformatics, Medical-informatics, Cheminformatics and Pharmacoinformatics.

Unit XII

Current researches in Bioinformatics. Applications of Bioinformatics in cancer detection, Drug targets.

Unit -XIII

Animal genome diversity - Introduction to DNA and Protein Sequence Analysis – Introduction and Concepts to biological Databases.

Unit - XIV

Phylogenetic analysis using PHYLIP, ClustalW.

Reference Books:

1. Daniel, W.W., 2007. Biostatistics, Wiley publishers, USA.
2. Zar, 2006. Biostatistical analysis, Dorling Kindersley Pvt Ltd, India.
3. Nolting, B., 2006. Methods in modern biophysics, Springer, Berlin.
4. Agarwal, S.K., 2005. Advanced biophysics, APH Publishing Corporations, India
5. Daniel, M., 2004. Basic biophysics, Agrobios publications, India
6. Bailey, N.T.J., 1997. Statistical Methods in Biology, III Ed., Cam. University Press, N.Y.
7. McCleery, R.H. and Watt, T.A., 2007. Introduction to Statistics for Biology. 3rd Ed., Chapman & Hall / CRC.
8. Goutham, N, Pattabi, S., 2001. Biophysics, Narossa Publishing company, New Delhi.
9. Mount, D., 2004. "Bioinformatics: Sequence and Genome Analysis"; Cold Spring Harbor Laboratory Press, New York.
10. Lesk, A.M., 2002. "Introduction to Bioinformatics", First edition, Oxford University Press, UK.
11. Lukas, K., Buehler, Hooman, H. Rashidi, 2000. "Bioinformatics Basics: Applications in Biological Science and Medicine"; CRC Press.
12. Jean-Michel, C. Notredame, C., 2003. "Bioinformatics for Dummies"; John Wiley & Sons.
13. R. Durbin, S. Eddy, A. Krogh and G. Hitchison, 2003. Biological Sequence Analysis, Cambridge University Press, Eighth edition.
14. Andrew R. Leach, Valerie J. Gillet, 2007. An Introduction to Chemoinformatics, Springer, Revised Edition.

Outcome:

This course will provide students with the basic concepts of biophysical techniques, statistical, computational skills and their application to assess biological macromolecules.

LAB-IV: 35044- FISHERIES AND AQUACULTURE, ANIMAL BIOTECHNOLOGY, AND BIOPHYSICS, BIOSTATISTICS AND BIOINFORMATICS

FISHERIES AND AQUACULTURE

1. Identification of commercially important fin fishes, shell fishes, molluscs, lobsters and seaweed.
2. Physical, biochemical and microbiological methods to examine freshness of fish.
3. Estimation of protein, lipid, carbohydrate and salt content in fish.
4. Determination of stocking density and feed assessment.
5. Method of transportation of seeds.
6. Modern crafts and gears.

ANIMAL BIOTECHNOLOGY

1. Isolation of genomic DNA.
2. Estimation of DNA.
3. Demonstration of ELISA.
4. RAPD, RFLP (Demo).
5. Extraction and purification of Plasmid DNA.
6. Spotter: Models of PCR, Southern blotting.
7. Cloning vectors – images.

BIOPHYSICS BIOSTATISTICS AND BIOINFORMATICS

1. Spectrophotometer, pH meter, and electrophoretic unit as spotters.
2. Construction of graph and bar diagram using biological data.
3. Calculation of mean, median, mode, variance, standard deviation and standard error and Chi-Square test.
4. IN SILICO Analysis

Reference books:

1. Moyle, P. B. and J. J. Cech, Jr., 1996. Fishes an introduction to Ichthyology, Prentice Hall, New Jersey.
2. Jean T. Nolan, 2009. Offshore Marine Aquaculture, Nova Science Pub Inc.
3. Michael King, 2007. Fisheries Biology, Assessment and Management, Wiley-Blackwell.
4. Laurence Hutchinson, 2006. Ecological Aquaculture: A Sustainable Solution Permanent Publications.
5. David Scarfe, Cheng-Sheng Lee, and Patricia J. O'Bryen, 2006. Aquaculture Biosecurity: Prevention, Control, and Eradication of Aquatic Animal Disease, Wiley-Blackwell.
6. Daniel, W. W. (2007) Biostatistics, Wiley publishers, USA
7. Zar (2006) Biostatistical analysis, Dorling Kindersley Pvt. Ltd. , India.
8. Pillay, T. V. R., and M. N. Kutty, 2005. Aquaculture: Principles and Practices, Wiley-Blackwell.
9. Sam brook J., Fritsh E.F., Maniatis T., 1989. Molecular cloning, volume -3, Cold Spring Harbour Laboratory.
10. Glover D.M and Hames B.D., 1995. DNA Cloning, 2nd edition, Volume - I, II, III, IRL press at Oxford University press, New York.

M.Sc- (Psychology)

Sl. No.	Course Code	Title of the Course	CIA Max.	ESE Max.	TOT Max.	C Max.
FIRST YEAR						
I Semester						
1.	36311	Theoretical Perspectives in Psychology	25	75	100	4
2.	36312	Life Span Psychology	25	75	100	4
3.	36313	Social Psychology	25	75	100	4
4.	36314	Psychology Practical- I	25	75	100	4
		Total	100	300	400	16
II Semester						
5.	36321	Theories of Personality	25	75	100	4
6.	36322	Research Methodology	25	75	100	4
7.	363231 363232	Elective(any one) Educational Psychology Rehabilitation Psychology	25	75	100	4
8.	36324	Psychology Practical – II	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III Semester						
9.	36331	Cognitive Neuro Psychology	25	75	100	4
10.	36332	Counseling Theories and Techniques	25	75	100	4
11.	36333	Psychopathology	25	75	100	4
12.	36334	Psychology Practical – III	25	75	100	4
		Total	100	300	400	16
IV Semester						
16.	36341	Abnormal psychology	25	75	100	4
17.	36342	Environmental psychology	25	75	100	4
18.	36343	Positive psychology	25	75	100	4
19.	363441 363442	Elective:(any one) Health Psychology Organisational Psychology	25	75	100	4
		Total	100	300	400	16
		Grand Total	400	1200	1600	64

Detailed Syllabi

FIRST SEMESTER

Course Code	Title of the Course
36311	THEORETICAL PERSPECTIVES IN PSYCHOLOGY

Learning objectives:

- To make students get a historical perspective about the development of psychology as an independent body of knowledge.
- To emphasize the understanding human behaviour from each school's perspective in respect of human motivation, development and functioning of human personality.
- To apply the principles of each school to the development of mankind as well as its therapeutic value.

BLOCK I: VARIOUS PERSPECTIVES IN PSYCHOLOGY

UNIT 1: Psychoanalytical perspective

History - Sigmund Freud's approach - Carl Jung, Adler, and other Neo-freudian approaches to motivation, personality, therapy and applications.

UNIT 2 : Behaviouristic perspective

Learning- Classical Conditioning (Pavlov) and Operant Conditioning (Skinner); Motivation – Drive and incentive theories (Hull), (Miller and Dollard, Rotter); Personality – Mowrer; therapeutic techniques and applications.

UNIT 3 : Humanistic & Existential perspectives

Motivation: Hierarchy of motives (Maslow) - ERG Theory (Alderfer) - Theory of needs (McClelland);

BLOCK II: PERSONALITY AND MOTIVATION

UNIT 4: Personality

Personal construct (Kelly) - Self-theory of personality (Rogers); Existential approaches - therapies and application.

UNIT 5 : Cognitive: Motivation

Cognitive balance and dissonance theory (Hieder, Festinger); Personality: Dissonance (Brehm),

UNIT 6: Social Perspectives

Social learning theory (Bandura); therapy and application.

UNIT 7 : Indigenous Perspectives

Motivation: Advaita, Buddhist and Jaina perspectives; Personality: Advaita, Upanishads, Buddhist and Jaina perspectives; Therapy (healing techniques), Applications.

BLOCK III: PSYCHOLINGUISTIC AND ITS PERCEPTION

UNIT 8: Psycholinguistic, Memory and Decision Making

Language structure; Theories of Language; Neurological basis of language, language Acquisition: stages in language development Memory Processes; Theories of Forgetting Models of Memory; Biological basis of memory; Strategies to improve memory Cognitive Strategies; Theories of Thought Processes, Concept formation, Creativity; Problem solving and Decision Making

UNIT 9: Attention and Perception

Attention: Definition and mechanism, determinants of attention, Selective, divided and sustained attention, Theories of Attention

UNIT 10: Approaches to study of perception:

Gestalt and physiological approaches; Perceptual Constancy; Illusion; Perception of Depth and Movements; Ecological perspective on perception

BLOCK IV: APPROACHES IN PSYCHOLOGY

UNIT 11: Perceptual Processes

Approaches to the Study of Perception – Gestalt, Behaviouristic and Physiological Approaches, Perceptual Organization – Gestalt, Figure and Background, Laws of Perceptual Organization, Perceptual Constancy – Size, Shape, Brightness, Depth Perception, Role of Motivation and Learning in Perception, Figural After Effect.

UNIT 12: Phenomenological Theory and Cognitive Theory

Kelly's Personal Construct Theory, Roger's Self Theory, Lewin's Field Theory, Festinger's Cognitive Dissonance Theory, Mischel's Cognitive-Behavioural Theory

UNIT 13: Psychology in India

Introduction; Twentieth Century Psychology in India and future perspectives.

UNIT 14 : Approaches of Psychology

Constructivism and Social Constructivism (Vygotsky, Gregan and Bruner)

References

1. Davis R.S (1996). Psychology of Learning and Motivation, academic press.
2. Ekman, Paul and Davidson, R.J (Eds-1994). The nature of emotions, fundamental questions. Delhi, OxfordUniversity press Series in affective science. Hall. C.S. Lindzey G and Campbell J.B (1998) theories of personality New York john wiley and sons (4th edition).
3. Hergenhahn B.R. and Olson M. H. (1998) Theories of personality, Prentice Hall
4. Hilgard, E. R Bower G.H, Sahakian, H (1997) Psychology of learning. Prentice hall of India, revised edition Lawrence .A, Pervin and Oliver P John (1997) Personality: theory and research new york, John Wiley , 7thedition
5. Sahakian(1976) Introduction to psychology of learning. Chicoga: Rand McNally college publishing company.
6. Weiner B (1985) Human Motivation, New York: Springer and Verlag.

Course Code	Title of the Course
36312	LIFE SPAN PSYCHOLOGY

Learning objectives:

- To explain the importance of studying life-span development
- To describe the history of interest in the life-span perspective and indicate how contemporary concerns have arisen from previous views.
- To describe the seven basic characteristics of the life-span perspective
- To discuss the nature of development as a pattern of movement or change occurring throughout the life span
- To define and distinguish between biological processes, cognitive processes, and socioemotional processes
- To understand the major developmental periods from conception to death
- To understand the three major developmental issues (nature and nurture, continuity and discontinuity, stability and change)

BLOCK I: DEVELOPMENT PSYCHOLOGY

UNIT 1: Introduction

An introduction to development in the lifespan- theoretical perspectives in developmental psychology and human development - Freud's psychosexual stages of development - Erikson's psychosocial stages of development - theories of learning -Piaget's cognitive stages of development - socio-cultural theories.

UNIT 2: Stages of development

Infancy, newborn and infant- prenatal diagnostic tests, genetic-environment interactions, timelines for prenatal development, teratology, and stages of childbirth. Newborn reflexes, newborn needs- patterns in infant physical development, infant temperament. Early Childhood- physical, cognitive, and socio emotional development- development of gross and fine motor skills- brain development. Middle childhood- physical and cognitive- growth patterns, child obesity, ADHD, and concrete operational stage of cognitive development. Social development- peer relations, divorce, and moral development.

UNIT 3: Basic Concepts

Aspects of Development, Life Span periods – Methods – Non Experimental, Experimental - Stages of Development – Principles of Development – Prenatal period – Birth – Neonatal stage – First year of Life – Early childhood, Middle childhood – Adolescence, Adulthood and old age.

UNIT 4: Physical Development

Motor Skills – Growth rate – Physical health during Adulthood, Physical fitness & energy –Motor functions in old age. Intellectual Development

BLOCK II: APPROACHES IN LIFE SPAN

UNIT 5 Approaches

Psychometric, Piagetian and Information processing

approach – Cognitive Development – Piaget's model – Language Acquisition and Development of language, Memory, Intelligence and Moral Development.

UNIT 6: Adolescence

History of marking adolescence - puberty - the secular trend regarding menarche and social implications for pubertal timing- Eating disorders -identity status. Other adolescent problem behaviors such as juvenile delinquency, depression, behaviour disorders and suicide

UNIT 7: Early adulthood

Emerging adulthood - timeframes for physical peak and the physical declines- adult sexuality and relationships- theories on post-formal thought and theory of love.

UNIT 8: Middle adulthood

Middle adulthood section- premenopausal and menopause- hormone therapy for menopausal symptoms- midlife crisis and transitions- and family relationships- Late adulthood and the end of life, biological aging, dementia/neurocognitive disorders, stages of dying, death, hospice and palliative care, and life satisfaction in late adulthood

BLOCK III: PROBLEMS AND ISSUES OF LIFE SPAN

UNIT 9: Life Span Problems

Mental Health Problems-Sexual Problems-AIDS/HIV- Preventive Measures- Emotional imbalance-Fear and Phobic Problems- Anxiety and Stress -Coping Style- Development of adaptive and positive behavior-Human relational Problems- Mental Peace-Life satisfaction. **UNIT 10: Personality and Social Development**

Emotions – emergence of Self – Role of parents and siblings – peer group influence – Psychoanalytic, social learning and cognitive perspectives in the personality development – Emotional problems of childhood – identity crisis in adolescence, relationship with parents and peers, sexual identity- Teenage problems.

UNIT 11: Personality and Social issues in young adulthood

Parenthood – Career planning – Intimate relationship and personal life styles – work life

– personal relationship in family and work life Old age Physical changes - Psychomotor functioning – Health & fitness – Health problems – Memory changes – Work and Retirement – Adjustment to Old age - Personal Relations in Late life – Death Bereavement – Purpose and

meaning of life.

BLOCK IV: SOCIAL BEHAVIOURS

UNIT 12: Social Motives, Attitudes And Learning In Social Contexts

Social motives and behaviour-The nature and measurement of attitude-
Reinforcement and learning-Social learning through imitation Attitude change

UNIT 13 : Antisocial and Pro-Social Behaviour

Aggression and management- Altruism and helping behaviour

UNIT 14 : Group Processes

Group formation and maintenance Types of group Group task performance, problem
solving Cooperation and competition - communication – empathy - Psycholinguistics

References

1. Newman, Barbara M.; Newman, P. R. (2011).Development Through Life: A Psychosocial Approach. Belmont, CA: Wadsworth Cengage Learning
2. Willem Doise (1998), Life-Span Developmental Psychology
3. John W Santrock (2012), A Topical Approach to Life-Span Development
4. MC David and Harari (1976) Social Psychology
5. Moghaddan, F.M. (1998) Social Psychology
6. Abrahamson, M. (1997) Social Research Methods
7. Shaw, M.E. (1995) group Dynamics.
8. Baron, R.A. and Byran, D. (2000). Social Psychology, New Delhi : Allyan and Bacon
9. Tedeschi and Lindskold (1978) Social Psychology

Course Code	Title of the Course
36313	SOCIAL PSYCHOLOGY

Learning Objectives:

- To enable the students understand social influences on human behaviour
- To enable the students understand the dynamics of social influence on positive and negative human behaviour
- To enable students to understand how social psychological principles are applied in day to day life situations.

BLOCK I: SCOPE OF SOCIAL PSYCHOLOGY

UNIT 1: Introduction: Nature and scope of social psychology; Overview of the history of social psychology (including development in India); Relationship with sociology and anthropology

UNIT 2 : Basic concepts of Social Psychology

Definition - Basic concepts of Social Psychology – scope – individual, society and culture – Social Psychology and related disciplines -- Social Psychology in the new millennium - Research Methods in Social Psychology: Survey, Correlation and Experimental Methods

UNIT 3: Brief history of social psychology (special emphasis on India),

Scope of social psychology, levels of social behavior, approaches towards understanding social behavior

BLOCK II: SELF-PERCEPTION AND BEHAVIOURS

UNIT 4 : Social Perception

Self-Perception: Self-concept, Perceived Self-control, Self-serving Bias, Self-presentation, Self-esteem, Self and Gender **Pceiving Others:** Non-Verbal Communication, Attribution, Impression Formation, Impression Management

UNIT5 : Attitudes And Behavior

Attitude formation – Development of Attitudes – Attitude and its influence on behaviour - Persuasion – Change in Attitudes – Resisting persuasion – Cognitive Dissonance – Ways to manage dissonance.

UNIT 6 : Prejudice And Aggression

Prejudice -Discrimination in Action – Sources of prejudice – Social, Emotional and Cognitive- Techniques to reduce Prejudice Aggression - Theories of Aggression - Types of Aggression - Determinants of Aggression - Environmental causes - prevention and control of Aggression.

BLOCK III: BEHAVIOURS AND INFLUENCE

UNIT 7 : Prosocial Behavior

Motives for Prosocial behaviour - Factors that Affect Helping Behavior, External

and Internal influences on helping behaviour – Long-term commitment to Prosocial Acts

UNIT 8: Understanding and evaluating

the social world: Social cognition, Social perception, Attitudes, Attitude-behaviour link; Strategies for attitude change

UNIT 9: Social interaction and Influence:

Interpersonal attraction, Pro-Social Behaviour, Aggression, Social Influence

UNIT 10: Group Dynamics and Inter-group relations: Nature of groups, Consequences of belonging (performance, decision making, cooperation and conflict), Nature of intergroup relations (prejudice, intergroup conflict, intervention techniques)

BLOCK IV: SOCIAL COGNITION

UNIT 11: Individual level processes: Person perception: attribution-theories, biases and errors Attitude: formation, change and resistance to change

UNIT 12: Interpersonal processes: Interpersonal attraction, prosocial behavior, aggression

UNIT 13: Group dynamics:

Key aspects of groups, cooperation and conflict, group decision making.

UNIT 14: Social Perception

Nonverbal Communications - Attribution: Understanding the causes of others Behaviour - Theories of Attribution- Kelley's model -Impression Formation and Management - Social Cognition: Social Information Heuristics and Automated Processing - Sources of Error. Groups: Types and formation - Theories of Group Formation - Co-ordination - Group Decision making -Group Think

REFERENCES

1. Baron, R. A., & Byrne, D. (2003). Social Psychology, 10th ed. New Delhi: Prentice Hall, India.
2. Baron, R. A., Branscombe, N.R., Byrne, D. & Bhardwaj, G. (2010). Social Psychology, 12th ed. New Delhi: Dorling Kindersley (India) Pvt Ltd.
3. Myers, D. G. (2002). Social Psychology, 7th ed. McGraw Hill: Int. Education.
4. Chaube, S. P., & Chaube, A. (2007). Ground Work for Social Psychology. New Delhi: Neelkamal.
5. Baron, R.A., Byrne, D. & Bhardwaj, G. (2010). Social Psychology (12
6. Th Ed.). New Delhi: Pearson.
7. Baumeister, R.F. & Bushman, B.J. (2013). Social Psychology and Human Nature. Wadsworth.
8. Franzoi, S.L. (2009). Social Psychology (5th Ed.). New York: McGraw-Hill.
9. Hogg, M. & Vaughan, G.M. (2008). Social Psychology. Prentice Hall.
10. Kassin, S., Fein, S., & Markus, H.R. (2008). Social Psychology. New York: Houghton Mifflin.
11. Misra, G. (2009). Psychology in India, Vol. 4: Theoretical and Methodological Developments (ICSSR Survey of Advances in Research). New Delhi: Pearson
12. Taylor, S.E., Peplau, L.A. & Sears, D.O. (2006). Social Psychology (12th Ed.). New Delhi: Pearson

PRACTICAL

Course Code	Title of the Course
36315	PSYCHOLOGY PRACTICAL I

Tests from the following areas will be selected by the University and conducted during the I semester of the course.

1. Attention
2. Learning
3. Memory
4. Perception
5. Intelligence
6. Problem Solving
7. Creativity
8. Adjustment
9. Attitude
10. Prejudice
11. Motivation
12. Achievement Motivation

REFERENCES

1. Cronbach, L.J. Essentials of Psychological Testing, 1972. New Delhi, Prentice Hall Inc.
2. Woodworth R.S. and Scholsberg, 1981, Experimental Psychology, New Delhi, Taa McGraw Hill Co. Ltd.,
3. Udaipreek, T. Venkateswara Rao. Handbook of Psychological and Social Instruments. Samashti, B-2, Chamelibagh, Baoda.

SEMESTER II

Course Code	Title of the Course
36321	THEORIES OF PERSONALITY

Learning Objectives

The course will enable students to

- To understand major theoretical approaches to personality
- To understand assessment methods used in personality.
- To understand the process of personality change and development

BLOCK I: NATURE AND THEORITICAL APPROACH

UNIT 1: Introduction to personality and personality theory

Personality: Meaning and related concepts-Factors that contribute to personality change and personality stability - The process of personality development- The nature of theories and its functions-

UNIT 2 : Nature of personality theory

Personality theory and other psychological theories- Overview of assessments of personality-Current research focus in personality psychology.

UNIT 3: Major theoretical approaches- Psychoanalytic and Psychodynamic theories. Neo Freudians.

Sigmund Freud 's Classic Psychoanalytic theory: The structure of personality: Id, ego& super ego, The dynamics of personality: Instinct, The distribution and utilisation of psychic energy & anxiety-The development of personality

UNIT 4: Carl Jung's Analytic theory

The structure of personality: The ego, The personal unconscious, The

collective unconscious-Interactions among the systems of personality.

BLOCK II: THEORIES OF PERSONALITY

UNIT 5: Alfred Adler

Inferiority Feelings: The Source of Human Striving - Striving for Superiority or Perfection- The Style of Life and birth order, Erick Fromm –

UNIT 6: Freedom or Security

The Basic Human Dilemma, Personality Development in Childhood -The Basic Psychological Needs - The Productive and Non -productive Character Types , Karen Horney

- The Childhood Need for Safety, Basic Anxiety: The Foundation of Neurosis
The Idealized Self-Image.

UNIT 7: Major theoretical approaches: Humanistic theories

Abraham Maslow: Personality Development: The Hierarchy of Needs. The Study of Self- Actualizers. Carl Rogers: The Self and the Tendency toward Actualization, the experiential world, The Development of the Self in Childhood and Characteristics of Fully Functioning Persons.

BLOCK III: PERSONALITY DEVELOPMENT

UNIT 8: Major theoretical approaches: Trait theories

Gordon Allport: The Nature of Personality, Personality Traits, Motivation: The Functional Autonomy of Motives ,

UNIT 9: Personality Development in Childhood

The Unique Self, The Healthy Adult Personality. Raymond Cattell- Cattell's Approach to Personality Traits ,Source Traits: The Basic Factors of Personality, Dynamic Traits: The Motivating Forces-The Influences of Heredity and Environment-

UNIT 10: Stages of Personality Development

Hans Eysenck: The Dimensions of Personality- Extraversion, Neuroticism, and

Psychoticism. Robert McCrae and Paul Costa: The Five-Factor Model- Arnold Buss and Robert Plomin: The Temperament Theory.

UNIT11: Major theoretical approaches: Cognitive approaches

Personal Construct Theory, Ways of Anticipating Life Events, the nature of personality.

BLOCK IV: THEORITICAL PERSPECTIVES

UNIT 12: Social learning theory

Albert Bandura: Modelling: The Basis of Observational Learning -The Processes of Observational Learning,-Self-Reinforcement and Self-Efficacy ,

UNIT 13: Behaviour theories

B.F. Skinner : Reinforcement: The Basis of Behaviour, Operant Conditioning and the Skinner Box- Schedules of Reinforcement, Successive Approximation: The Shaping of Behaviour-Superstitious Behaviour, The Self-Control of Behaviour-Applications of Operant Conditioning.

UNIT14: The Psychodynamic Perspective

Classical Psychoanalysis – Freudian Psychoanalysis – Ego Psychology and Neo-Freudians

–Hartman – Kohlberg – Erickson - Adler – Sullivan – Jung –

Eric Berne. References

1. Hall, S.C., Lindzey, G.,Campbell, B J. (2007). Theories of personality.(4th Ed). India: John Wiley & Sons, Inc.
2. Haslam, N (2007). Introduction to personality and Intelligence. London. Sage Publications Ltd
3. Schultz, P. D &Schultz, E. S (2005). Theories of personality.(8th Ed). UK: Wadsworth Publusers.
4. Freidman, H.S. and Schustack, M. W (2004). Personality. New Delhi: Pearson Education.

Course Code	Title of the Course
36322	RESEARCH METHODOLOGY

Learning Objectives

- Students will understand a general definition of research design.
- Students know why educational research is undertaken, and the audiences that profit from research studies.
- Students are able to identify the overall process of designing a research study from its inception to its report.
- Students will be familiar with ethical issues in educational research, including those issues that arise in using quantitative and qualitative research.
- Students know the primary characteristics of quantitative research and qualitative research.
- Students will be able to identify a research problem stated in a study.

BLOCK I: RESEARCH AND PLANNING

UNIT 1: Meaning, Types and Process of Research

Meaning – Purpose – Types of research – Pure, applied, historical, analytical, descriptive and experimental – Significance of research in social sciences – Process of research – Meaning – Scientific method – Induction and deduction.

UNIT 2: Planning Research

Research problem – Identification, selection and formulation of research problem – Review of literature in the field of corporate management – Hypothesis – Meaning – Sources of hypothesis – Types of Hypothesis – Formulation and testing – Research design – Factors affecting research design – Evaluation of research design.

UNIT 3: Sampling Design

Census method and sampling method for investigation – Advantages and disadvantages of sampling – Principle of sampling – Essentials of a good sampling – Methods of sampling – Probability and non-probability sampling methods – Selection of a sample – Factors affecting the size of the sample – Biased sample – Sampling and non-sampling errors.

BLOCK II: DATA AND RESEARCH APPROACHES

UNIT 4: Sources and Collection of Data

Sources of data – Primary and secondary data – Modes of data collection – Analytical method – Case study – Observation – Survey method – Interview – Its purpose and

importance – Types of interview – Preparation for an interview – Effective interview techniques – Limitations of interview – Schedule – Its meaning and kinds – Essentials of a good schedule – Procedure for the formulation of a schedule – Questionnaire – Meaning and types – Format of a good questionnaire – Factors affecting the response to a questionnaire – Advantages and limitations of schedules and questionnaires – Pre-testing and its importance.

UNIT 5: Processing and Analysis of Data

Meaning – Importance – Process of data analysis – Editing – Coding – Tabulation – Diagrams – The process of interpretation – Guidelines for making valid interpretation – Scaling techniques – Meaning – Importance – Methods of their construction.

UNIT 6 : Foundations Of Research

Research: Meaning – objectives – Types – Research Approaches – Significance of research – Research Methods versus Methodology – Research and Scientific method – Problems encountered by researchers in India. Ethical Principles in animal research and research with human participants. Major stages in research

BLOCK III: RESEARCH PROBLEMS, TOOLS AND STATISTICS

UNIT 7 : Research Problems

Nature – Sources – Defining and stating a problem – Criteria of a good problem. Review of Literature: Functions – Sources – The search for the literature – Criticism.

UNIT 8 :Tools of Research

Tools of research: Criteria for selection of tools – Factors related to construction of tools – Tools of different types: Observation – Interview – Questionnaire – checklist- Rating Scales: Merits and Limitations – Writing a research proposal.

UNIT 9: Statistics

Scales of measurement - Frequency distributions and Graphs: Steps – Exact limits and midpoints of the class intervals – Graphical representation of Data: Different types of graphs – Issues to consider when preparing a graph. Measures of Central Tendency: The Mean, Median and Mode

UNIT 10 :Measures of Variability

The Range, Quartile Deviation, Average Deviation and Standard Deviation.

Normal probability curve: Characteristics – Applications – Skewness and kurtosis

BLOCK IV: RESEARCH TECHNIQUES AND METHODS

UNIT 11: Statistical Techniques Applied In Psychology

Correlation: Meaning – Concept of Correlation – Pearson's Product moment correlation – Rank order correlation – Test of Significance: t Test – Calculation and interpretations – The t² ratio and its assumptions. Analysis of Variance (ANOVA): Meaning – logic – example for one-way ANOVA – interpretation – Assumptions of the ANOVA. Regression and prediction- An overview of Non-Parametric statistics.

UNIT 12 :Research Methods

Normative Survey – Experimental Research – Variables and experimental control. Experimental designs: Pre-experimental designs – True experimental designs – Quasi experimental designs – Single subject experimental designs – Ex-post Facto Designs – Interpretation and report writing.

UNIT:13 Variables

Operationally defining variables, types of variables, controlling variables. Hypothesis - Formulation, types, Research lab – Formulation of research hypotheses, Research proposal.

UNIT: 14 SPSS for Psychology

26 quantitative analysis of the data – purpose, conditions and interpretation of major parametric and non parametric statistical techniques using SPSS

References

1. John W Best, Research in Education.
2. Anderson et-al, Thesis and Assignment Writing.
3. Goode and Hatt, Methods of Social Research.
4. Wilkinson and Bhandarkar, Methods and Techniques of Social Research.
5. ICSSR, Training in Research Methodology in Social Sciences in India.
6. Coaley, K. (2009). An Introduction to Psychological Assessment and Psychometrics.
7. New Delhi: Sage Publications.
8. Coolican, H. (2009). Research Methods in Statistics in Psychology. New Delhi:
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- sciences. UNITED States: Wordsworth cengage learning
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 13. Kundu. (2010). Research Methodology. New Delhi: Pearson Publishing.
 14. Myers, J. (2008). Methods in Psychological Research. New Delhi: Sage Publications.
 15. Ruyon, R.P, Haber, A, Pittenger, D.J and Coleman, K.A. (2010). Fundamentals of Behavioural Statistics. New York: Mc Graw Hill.
 16. Singh, A.K. (2006). Tests, Measurements and Research Methods in Behavioural Sciences. Patna: Bharati Bhavan Publishers.
 17. Flick, U. (2010). Introduction to Qualitative Research (fourth edition). New Delhi: SagePublications,
 18. Garret, H. E. (2005). Statistics in Psychology and Education. New Delhi: Paragon International.
 19. Krishna Swamy, O. P. (1993). Methodology of research in Social Sciences. Himalaya Publishing house.
 20. Kothari, C. R. (1998). Research Methods and techniques. New Delhi: Wiley Eastern.
 21. Miles, J. (2001). Research Methods and Statistics. Exeter, Crucial.

Course Code	Title of the Course
363231	Elective: Educational Psychology

Learning Objectives

At the end of the Course, student will be able to:

- Analyze the different principles and theories explaining student learning
- Evaluate the effectiveness of the theories in explaining individual differences in learning
- Apply the different principles and theories of learning in the classroom
- Analyze the impact of educational psychology on the processes of teaching and learning

BLOCK I: PRINCIPLES AND THEORIES

UNIT 1 : Psychology: An Overview

Introduction - Psychology Meaning - History of Psychology -Branches of Psychology - Research Methods in Psychology- Psychology of Learning and Education -Learning - Summary.

UNIT 2: Behavioural Learning theories

Introduction - classical conditioning by Ivan Pavlov - Classical Conditioning in Daily Life - Behaviourism - Watsan's Experiments with Little albert - Classical Conditioning in the Classroom - connectionism - Edward L.Thorndike - Implications of Thorndike's Thories - Operant Conditioning by B.F.Skinner - Schedules of Reinforcement - shaping Behaviour - Applying Operant Conditioning in the Classroom - Summary.

UNIT 3: Cognitive Learning Theories

Introduction: Cognitive - Gestalt Theories of Learning -Problem Solving by Insight - Piaget's Theory of Learning - Piaget's Theory: Application in the Classroom - Social Learning Theory: Albert Bandura -Modeling, Imitation and Reinforcement - Application of Social Learning Theory- Theory of Meaningful Learning: David Ausubel-Application of Ausubel's Learning Theory-Summary.

BLOCK II: LEARNING ASPECTS

UNIT 4: Critical and creative Thinking

Introduction -Some Perspectives about Teaching Thinking-Definitions of Thinking-Attributes of Good Thinkers- A programme for Teaching Thinking-Critical Thinking-Components of Critical Thinking-Socratic Questioning to Enhance Critical Thinking-Creative Thinking- Definition of Creative Thinking-The Creative Process-The Creative Person-Helping Children to be More Creative-Summary.

UNIT 5: Motivation and Learning

Introduction-Some Thought on Emotion and Learning-Motivation-Expectancy-Value Theory- Valuing Task-Expecting Success-Motivating Students to Learn-Summary.

UNIT 6: Research in educational psychology Experimental and non experimental methods
UNIT 7: Different views of learning

Developmentally based views of teaching and learning: Piaget's theory of intellectual, development and classroom application, Vygotsky's sociocultural applications, Constructivism, Language Acquisition, Development of morality, social responsibility and self control, Behaviourist views of learning.

BLOCK III: CLASSROOM MANAGEMENT

UNIT 8: Classroom atmosphere and management Discipline- nature and meaning. Styles. Problem behaviour. **UNIT 9: Learner differences**

Intelligence, Socioeconomic status, Culture, Gender, At risk students

UNIT 10 : Children with special needs

Socially disadvantaged, Disabled children, talented, gifted and creative children Mainstreaming and inclusion.

UNIT 11: Application of theories of learning in teaching

Classical conditioning, operant conditioning, Connectionism, Social cognitive learning, Cognitive Psychology perspectives to learning; David Ausubel's meaningful reception learning, Jerome Bruner's discovery learning.

BLOCK IV: BEHAVIOUR MODIFICATION

UNIT 12: Effective teaching-learning and evaluation

Self regulation in learning-meaning, factors, self-regulated learning cycle; Group work and co-operation in learning-defining elements of co-operative learning, strategies for cooperative and Collaborative learning .Classroom management, creating effective learning environment, methods and technical issues in the assessment of students, Effective teaching strategies, technology based teaching strategies

UNIT 13: Use of Behaviour Modification in School setting

Rewarding inciples of Differential reinforcement Modelling
Shaping Contingency management, Contracting

UNIT 14: Role of the College Counsellor

Career Counselling Individual Counselling for Personal Growth, Adjustment Problems at home or college, Interpersonal Relationship Issues, Love Failures, Attempted Suicide, Substance-Abuse Training for Life skills and Study Skills,

Overall Personality Development

References

1. Snowman, J.&McCown, R.Biehler, R.F.(2012).Psychology applied to teaching (13th ed.). Wadsworth Cengage Learning.
2. Bryan, H. (2010) Education – Study and teaching (Graduate).London:SAGE
3. Wade, C. & Tavaris, C.(2010) Psychology.(7th ed.) Upper Saddle River, NJ:Prentice Hall.
4. Slain, R.E. (2011).Educational Psychology:Theory and Practice.(10th Edition),Pearson.
5. Ames, C. (1992). Classroom: Goals, Structure and student motivation.
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7. Kottler, J. A., &Kottler,E. (2007). Counseling Skills for Teachers, 2/E. Corwin Press
8. Woolfolk, A. (2004). Educational Psychology, 9th Edition. Delhi: PearsonEducation.

Course Code	Title of the Course
363232	Elective: REHABILITATION PSYCHOLOGY

Learning Objectives

- To understand the historical perspectives, methods and functions of rehabilitation psychologist in the field of rehabilitation services.
- To become aware of psychological approach to rehabilitation in rehabilitation psychology.
- To understand the personality development among children with disabilities and their coping styles and rehabilitation process
- To be aware on the rehabilitation process in various areas.

BLOCK I: HISTORICAL PERSPECTIVES OF REHABILITATION PSYCHOLOGY

UNIT1: Rehabilitation Psychology:

Definition- scope- methods and Functions of Rehabilitation Psychology- historical perspectives in Rehabilitation Psychology

UNIT 2: Competencies of Rehabilitation Psychologists:

Professional Competencies of rehabilitation psychologists, nature of work settings of rehabilitation psychologists, Designing training programmes for rehabilitation psychologists, Training need analysis and implementation of training programmes.

UNIT 3: Psychological Rehabilitation and Intervention:

Definition and basic principles of Psychological Rehabilitation, Assessment, diagnosis, and Intervention – Psychoanalytic therapy, Client Centred Therapy, Cognitive Behaviour therapy, Rational Emotive therapy, supportive therapy, Augmentative therapy and Behaviour therapy.

UNIT 4: Rehabilitation of Persons with Disabilities:

Lifespan development of persons with disabilities, Personality traits – Psychological problems and coping styles – Role of psychologist in disability rehabilitation.

BLOCK II: NATURE AND REHABILITATION PROCESS

UNIT 5: Rehabilitation Process in various areas:

Family and Marital Rehabilitation, Socio Economic Rehabilitation for Persons with disabilities, Addiction Rehabilitation, Vocational Rehabilitation, CommUNITY based rehabilitation, Disaster Rehabilitation/Reconstruction.

UNIT 6 : Disabilities

Disability - Concept and definitions, Classification of various disabilities, Incidence and prevalence Types of disabilities: Visual impairment, Hearing and speech impairment, Locomotor disability, Mental retardation, Cerebral palsy, Autism , Mental illness Learning disabilities, Multiple handicaps Etiological factors; pre-natal, natal and post-natal, chromosomal aberrations and genetic errors, Prevention of disabilities

UNIT 7 : Nature and Scope of Rehabilitation psychology

Definition, historical perspective, scope and methods, Functions of Rehabilitation Psychology: General functions and special functions, History and Philosophy of Disability Rehabilitation Goals and objectives of rehabilitation,

BLOCK III: APPROACHES REHABILITATION

UNIT 8: Multi-disciplinary approach to rehabilitation: Biological, medical, psychological, educational and social aspects. **UNIT9 : Psychological Intervention**

Planning Intervention: Psychoanalytic Approach, Learning Theories and Strategies, Planning and Designing, Learning Situations, Counselling Strategies. Therapeutic services and Restorative techniques.

UNIT 10 : Designing Training Programmes for Professionals:

Training Need Analysis, Implementation of Training Programmes Monitory and Impact Studies.

UNIT 11 : Organization & Management

Evolution of Non-Government Organizations Background Characteristics of Organization Capacity Building of Non-Government Organizations

BLOCK IV: PERSONALITY DEVELOPMENT AND INTERVENTION

UNIT 12: Personality Development of Disabled Persons and intervention Factors influencing personality development of disabled individuals, Life span development of people with disabilities, Assessment of personality of disabled

individuals, Screening and early identification of people with developmental disabilities. Social, Psychological Perspective in Rehabilitation Psychology.

UNIT 13 : Early intervention:

Definition, assessment and strategies for intervention. Intervention packages for various disabilities. Services and programmes for disabled individuals and their families in India

UNIT 14 : Special education:

Aims, objectives and functions, Emerging trends in special education.

Educational assessment and evaluation for persons with disabilities, Educational technology for disabled

References

1. Golden C.J., 1984. Current Topics in Rehabilitation Psychology: Grune & Straton, London.
2. Nirbhay N.Singh, 1998. Comprehensive Clinical Psychology: Application in Diverse Populations, Volume 9, Elsevier Science, Pergamon.
3. Zigler, E, Gates, D.B (1999). Personality development in individuals with Mental Retardation, New York: Cambridge University Press.
4. Kundu, C.L., 2000. Status of Disability in India – 2000. Rehabilitation Council of India, New Delhi.

PRACTICAL – II

Course Code	Title of the Course
36324	PSYCHOLOGY PRACTICAL – II

Tests from the following areas will be selected by the University and Conducted during the II semester of the course.

1. Anxiety Measurement
2. Anger
3. Assertiveness
4. Stress Measurement
5. Stress Coping Skills
6. Personality Measurement
7. Aptitude
8. Interest
9. Study Skills
10. Job Satisfaction
11. Organisational Climate
12. Mental Health

REFERENCES:

1. Cronbach, L.J. Essentials of Psychological Testing, 1972. New Delhi, Prentice Hall Inc.
2. Woodworth R.S. and Scholsberg, 1981, Experimental Psychology, New Delhi, Taa McGraw Hill Co. Ltd.,
3. Udaipreek, T. Venkateswara Rao. Handbook of Psychological and Social Instruments. Samashti, B-2, Chamelibagh, Baroda-2.

SECOND YEAR III SEMESTER

Course Code	Title of the Course
36331	COGNITIVE PSYCHOLOGY NEURO

Learning Objectives

- To explain the mediatory role of cognition in behavior
- To explain the process and function of attention
- To describe sensational, perceptual phenomena and its different scientific explanations
- To elucidate how the memory system functions
- To explain the process and function of Neuropsychology
- To describe Plasticity and Restoration of brain function

BLOCK I: ROLE OF COGNITIVE BEHAVIOUR

UNIT 1: Cognitive Psychology

Psychological processes-Emergence of different approaches to cognitive psychology information processing- connectionism & ecological perspective;

UNIT 2: Attention

Model of attention- Functions of executive preconscious and conscious processing alerting mechanism-Selective attention: Bottom-up and top down processing automatically- division of attention-Theories of attention Bottle neck & spotlight concepts Filter model-attenuation theory- multimode theory- resources & capacity allocation model schema theory.

UNIT 3 : Introduction Cognitive Neuropsychology

Meaning- History- Assumptions of Cognitive Neuropsychology- Neuroanatomy: the nervous system, surrounding structures (skull, blood vessels, meninges, ventricles)- Spinal cord,

brainstem, cerebellum, midbrain, thalamus, basal ganglia, cortex. The cellular foundations of the nerve function: Types of nerve cells-functions- the Four lobes and their Functions

BLOCK II: METHODS AND NEURAL PROCESS

UNIT 4 : Methods

Case Study- Animal Studies- Human Lesion Studies- Structural (X-ray, CT, MRI) and functional (SPECT, fMRI, PET, NIRS) neuroimaging. Electrophysiological methods: electroencephalography (EEG), event-related potentials (ERP), magnetic encephalography (MEG). Controlling the brain - neurofeedback.

UNIT5 : Perception & Attention

Visual pattern recognition: Template-matching model – Feature analysis – Object recognition – Face recognition. Speech recognition – Feature analysis of speech. Context and pattern recognition – FLMP model. Attention: Auditory attention – Filter theory – Attenuation theory. Visual attention: Neural basis – Visual search – Binding problem – Visual neglect – Object based attention. Central attention – Automaticity – Stroop effect.

UNIT 6: Memory and Cognition

Memory: Atkinson and Shiffrin Model- Neural Networks Model - Kinds of information stored in Memory: Working Memory- Episodic and Semantic Memory- Procedural Memory Methods to Study Memory-Forgetting- Memory Distortion and Memory Construction Memory in Everyday Life- Memory and the Brain- Memory Improvement Techniques.

Cognition: Thinking- Basic Elements of Thought- Reasoning– Making Decisions- Problem solving and its Methods- Artificial Intelligence- Language and its Development – Language and Thought. Sensory memory: Visual – Auditory. Short-term memory – Working memory: addeley’s theory – Long-term memory – Factors influencing memory – Techniques for studying textual material. Retention – Interference – Retrieval and inference: Plausible retrieval – Elaboration & inference – Eyewitness testimony & False memory. Associative structure and retrieval: Effect of encoding context – Encoding-specificity.

BLOCK III: PERCEPTUAL PHENOMENA

UNIT 7 : Problem Solving And Reasoning

Problem solving process – Problem solving operators: Acquisition of operators – Analogy & imitation. Operator selection: Difference-reduction model –Mean-end analysis – Tower of Hanoi –Problem representation: functional fixedness. Set effects.Reasoning about conditionals: Wason selection task – Permission schema – Probabilistic interpretation. Deductive reasoning: Categorical syllogism –Atmosphere hypothesis –Process explanation. Inductive reasoning: Hypothesis formation and testing.

UNIT 8 : Sensation & Perception

Theories of perception: top down and bottom up perspective-visuopatial sub codes pattern recognition- Perceptual phenomena Pain perception, constancies and illusions- mental imagery-

UNIT 9 : Classical and modern Psychophysics:

Fechner’s contributions- Weber’s law Steven’s power law- signal detection theory- ROC curve Top down processes- influence of motivation & learning on perception-role of culture perceptual organization- subliminal perception and synesthesia.

UNIT 10 : Memory

Encoding theories and models of memory two store model information processing approach levels of processing levels of recall-Sensory memory- short term memory-working memory models- Storage Long – term memory episodic and semantic memory-autobiographical memory- declarative and procedural memory- Implicit and explicit memory

BLOCK IV: NEUROPSYCHOLOGY

UNIT 11 : Retrieval

Recall reconstruction in memory-Forgetting: Theories interference decay organic causes encoding failure- failure of reconstruction- Metacognition: Meaning and Concept and its implications.

UNIT 12: Neuropsychology

Assumptions and methods- functional modularity- anatomical functional architecture and substractivity

UNIT 13: Methods of investigation:

Electrophysiological Single cell recording, EEG and ERP Scanning and Imaging –CAT

PET MRI and FMRI; Neuropsychological Battery Luria Nebraska Neuropsychological Battery, Halstead Retain Test Battery PGI Battery of Brian Behaviour Dysfunction AIIMS neuropsychological battery; Neurodegenerative disorders Parkinson's Alzheimer, Huntington

UNIT 14 : Neuropsychological Plasticity and Restoration of Brain

Historical antecedents and approaches-Types of brain injury-Methods of localization of cognitive functions in the Brain; Function Mind and Brian relationship - computer assisted neuropsychological rehabilitation and training

References

1. Anderson, J.R. (2010). Cognitive Psychology and Its Implications. New York, NY: Worth Publishers.
2. Boller F & Grafman J (1988). Handbook of neuropsychology. New York: Elsevier
3. Eysenck, M.W. (1990). Cognitive Psychology: An International Review. West Sussex, England: John Wiley & Sons, Ltd. (pp. 111)
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7. Rapp, B. E. (2001). The handbook of cognitive neuropsychology: What deficits reveal about the human mind. Psychology Press.

Course Code	Title of the Course
36332	Counselling Theories and Techniques

Learning Objectives

1. To enable the students understand the nature of counselling process
2. To enable the students to understand various theoretical approaches to counselling
3. To impart the students with knowledge about skills and techniques relating to various approaches of counselling

BLOCK I: COUNSELLING – HOLISTIC PERSPECTIVE

UNIT 1 : Introduction

Counselling: Definition -Counselling as a process - Purpose and Goals of Counselling, Overview stages of counseling – Characteristics of an effective counselor - Ethics in Counselling.

UNIT 2 : Meaning and Nature

Definition - Aims and Scope of Counselling – Characteristics of effective Counselling - Application of Counselling in various areas - Diversity in Counselling - Attitude of a professional Counsellor - Personality of effective Counsellors -Values in Counselling - Ethical Considerations for a Counselor - Characteristics of a Successful Counselee - Counselee Expectations

UNIT 3 : Psychoanalytic Theory and Techniques

Key concepts – view of human nature, structure of personality, consciousness and the unconscious, Anxiety, Ego-defense mechanisms, Jung’s perspectives on the Development of personality,

UNIT 4 : Contemporary trends

Self Psychology and Object-Relations Theory; Therapeutic process; Techniques – Maintaining the analytic framework- Free Association-Interpretation- Dream Analysis- Analysis and Interpretation of Resistance- Analysis and Interpretation of Resistance; Evaluation

BLOCK II: THEORITICAL PERSPECTIVES

UNIT 5 : Humanistic Theories and Techniques

Person-Centered Theory – Key concepts – View of human nature, Basic characteristics; Therapeutic process- Application-Evaluation

UNIT 6: Gestalt Theory - Key concepts – Principles of Gestalt therapy theory, The Now, Unfinished Business, Personality as Peeling an Onion, Contact and Resistances to Contact, Energy and Blocks to Energy; Therapeutic process;

Application/Techniques – The Internal Dialogue Exercise, Making the rounds, the reversal technique, the rehearsal exercise, the exaggeration exercise, staying with the feeling, the gestalt approach to dream work; Evaluation

UNIT 7: Reality Theory - Key concepts– A choice theory explanation of Behaviour, Characteristics of Reality therapy -Therapeutic process, Application – Procedures that lead to change, the “WDEP” system, Evaluation

UNIT 8 :– Behavioural Counselling: Theory And Practice

Theory Introduction – Pavlov’s Classical conditioning, Watson’s Conditioned Behaviourism, Skinner’s Operant Behaviourism, Wolpe’s Reciprocal Inhibition, Eysenck’s Incubation Theory

BLOCK III: ASSESSMENT AND APPROACHES

UNIT 9: Practice

Goals for counseling - Behavioural Assessment – Relaxation Procedures – Systematic Desensitization – Behaviour Rehearsal and Assertive Training – Reinforcement Methods

UNIT 10 : Cognitive Behaviour Therapy

Introduction – Key concepts and Application – Albert Ellis’s Rational Emotive Behaviour Therapy, Aaron Beck’s Cognitive Therapy, Donald Meichenbaum’s Cognitive Behaviour Modification

UNIT 11: Basic Concepts

Meaning of Guidance and Counseling and their differences – Approaches to counselling, person centred, Gestalt, Psychoanalytic, Cognitive, Trait factor, Behavioral and eclectic approach - Assessment Techniques - Important Factors – Tools of Assessment.

BLOCK IV: COUNSELLING TECHNIQUES

UNIT 12 : Goals of Counselling

Counselling process – characteristics of counselor –Group counselling – special areas of counselling - applied areas multicultural counselling – Ethical issues.

UNIT 13 : Cognitive Behaviour Modification

Fundamental Aspects – Cognitive Restructuring – Meichenbaum’s Self Instructional training – Beck’s Model –Rational Emotive Therapy (Ellis) – Thought Stopping and Variations – Problem Solving Techniques.

UNIT 14: Professional Preparation & Training

Selection, skills, counseling as a profession, desirable characteristics - Modern

Trends: Career guidance, Functions of counselor, values - Assessment: Physical setting, room, length of session, group counseling, stages of counseling - Techniques: Egan's Model, Interviews, testing.

References

1. Corey, G. (1996). *Theory and Practice of Counselling and Psychotherapy*. 5th ed. Belmont, CA: Brook/Cole.
2. Nelson, J. (1982). *The Theory and Practice of Counselling Psychology*. New York: Holt Rinehart & Winston.
3. Patterson, L. W. & Welfel, E. R. (2000). *The Counselling Process*. 5th ed. Belmont, CA: Brook/Cole.
4. Richard Nelson- Jones (2012). *Basic Counselling Skills- a Helper's Manual*, 3rd Edition, Sage Publication India Pvt Ltd, New Delhi.
5. Brammer, L.M. and Shostrom E.L, *Therapeutic Psychology*, 1977, Englewood Cliffs, New Jersey.
6. D. John Antony, *Skills of Counselling*, 2003, Anugraha Publications.

Course Code	Title of the Course
36333	Psychopathology

Learning Objectives:

- To define psychopathology.
- To describe the criteria for abnormality.
- To explain the diathesis-stress model and how it contributes to our overall understanding of the classification and causes of psychological disorders.
- To describe the contents of the Diagnostic and Statistical Manual of Mental Disorders (DSM5)
- To explain why accurate and reliable diagnosis is important. What are possible drawbacks or disadvantages to a diagnostic system like the DSM-5?
- To define anxiety disorder. Specify what disorders are classified as anxiety disorders.
-

BLOCK I: ABNORMAL BEHAVIOUR AND DISORDERS

UNIT1: Introduction

Meaning of abnormal behavior-Need for classification- Historical views of abnormal behavior- Humanitarian approaches, Contemporary views of abnormal behavior- Causal factors: Biological, Psychosocial and Sociocultural

UNIT 2: Anxiety disorders

Anxiety disorders: Specific phobias, Social phobias, Panic disorder with and without agoraphobia-Generalized anxiety disorder-Obsessive-compulsive disorder-Causal factors of Anxiety disorders and treatment.

UNIT 3: Mood disorders

Unipolar mood disorders – Major depression, Dysthymia, Causal factors, Treatment and outcome, Bipolar disorders – Bipolar-I, Bipolar-II and Cyclothymic, Causal factors of Bipolar disorders, Treatment and outcome.

UNIT 4: Somatoform disorders

Somatoform disorders: Hypochondriasis- Somatization disorder,-Pain disorder,- Conversion disorder and Body dysmorphic disorder-Dissociative disorders: Depersonalization disorder,- Dissociative Amnesia, Dissociative Identity Disorder, Causal factors, Treatment and Outcome of Dissociative disorders.

BLOCK II: PERSONALITY DISORDERS

UNIT 5 :Sexual Dysfunction

Sexual Desire disorders, Sexual Arousal disorders, Orgasmic disorders and Sexual pain disorders.

UNIT 6: Schizophrenia and personality disorders

Schizophrenia: Clinical picture-Subtypes of Schizophrenia: Paranoid, Disorganized, Catatonic- Undifferentiated- Residual type and other psychotic disorders- Causal factors- Treatment and Outcome.

UNIT 7: Personality disorders

Clinical Features- Categories of personality disorders: Paranoid, Schizoid, Schizotypal, Histrionic, Narcissistic, Antisocial, Borderline, Avoidant, Dependent and Obsessive compulsive, Causal factors of personality disorders, Treatment and Outcome.

BLOCK III: THERAPY AND ASSESSMENT

UNIT 8: Therapy

Psychological approaches- Behaviour therapy, Cognitive and Cognitive-Behaviour therapy- Humanistic-Experiential therapy,-Psychodynamic therapy- Marital and Family therapy- Eclecticism and Integration.

UNIT 9 : Prevention

Universal Interventions, Selective Interventions, Indicated Interventions and Deinstitutionalization.

UNIT10: Assessment and Diagnosis

Assessing psychological disorders: Clinical interview - Physical examination Behavioural assessment – Psychological testing. Diagnosis: Classification issues - DSM IV – ICD 10

BLOCK IV: DISORDERS

UNIT 11: Anxiety Disorders

Generalized anxiety disorder: Clinical description – Causes – Treatment Panic disorder with and without agoraphobia: Clinical description – Causes – Treatment Specific phobia: Clinical description – Causes – Treatment Post-traumatic stress disorder: Clinical description – Causes – Treatment Obsessive-compulsive disorder: Clinical description – Causes – Treatment

UNIT 12 : Mood Disorders

Mood disorders: Depressive disorders – Bipolar disorder – Causes – Treatment. Suicide – Risk factors – Treatment.

UNIT 13: Eating disorders

Bulimia nervosa – Anorexia Nervosa – binge eating disorder – Causes and treatment of eating disorders

UNIT 14 : Sleep disorders

Dys-somnias – Primary insomnia – Primary Hypersomnia – Narcolepsy – Breathing related sleep disorders – Circadian rhythm sleep disorders – Treatment: Psychological and Behavioural treatment.

References

1. Robert C. Carson & James N. Butcher.(2007) Abnormal psychology. Pearson Education Inc. New Delhi
2. Barlow and Durand.(2006).Abnormal Psychology.NewYork. Pearson India Ltd.
3. Sarason and Sarason. (2010). Abnormal Psychology: The Problem of Maladaptive Behaviour (11th Edition). New Delhi. Prentice Hall of India Pvt. Ltd.

Practical – III

Course Code	Title of the Course
36334	Psychology Practical – III

Tests from the following areas will be selected by the University and Conducted during the III semester of the course.

1. Transfer of Training
2. Self esteem
3. Interpersonal Skills
4. Communication Skills
5. Leadership
6. Group Dynamics
7. Neuro Psychological Assessment
8. Decision Making
9. Disability Assessment
10. Phobia
11. Depression
12. Obsessive Compulsive Symptoms/Disorders

Course Code	Title of the Course
36341	ABNORMAL PSYCHOLOGY

BLOCK I: ABNORMAL BEHAVIOUR

UNIT 1: Introduction and Theoretical Perspective

Defining Abnormal Behaviour, Criteria of Abnormal Behaviour, Brief Mention of DSM and ICD classification systems, Causes of Abnormal Behaviour – Necessary, Predisposing, Precipitating and Reinforcing Causes.

UNIT 2 :Normality and Abnormality

Concept and Meaning of Normality- Mental Health – WHO definition- Jahoda's Healthy Personality, Allport's mature personality- Concept and meaning of Abnormality

UNIT 3: Ways of thinking about abnormality

Conception of abnormal behavior – multi dimensional view of abnormality – clinical assessment and diagnosis

UNIT 4: Disorders of childhood and adolescence

Mental Retardation - Definition, Levels of MR, Clinical Types and Causal Factors; Autism - Clinical Picture and Causal Factors

BLOCK II: FACTORS AND PROCESS

UNIT 5: Anxiety related Disorders

Anxiety Disorders- somatoform and dissociative disorders – mood disorders – Major Depressive Disorder with Psychosocial Causal Factors.

UNIT 6: Psychoses; Personality and developmental disorders

Personality disorders – schizophrenia and psychotic disorders – cognitive disorders – developmental disorders – legal, ethical, professional and social issues.

UNIT 7: The Consumer's Decision Making Process

Models of Consumer Decision Making-Communication and Persuasion-Opinion Leadership Professes

BLOCK III: DISORDERS

UNIT 8: Mood disorders, Schizophrenia and other Psychotic disorders

Depressive disorders , bipolar disorders, Cyclothymic disorders. Schizophrenia, Schizoaffective disorders, Delusional disorder. Brief psychotic disorder, shared psychotic disorder, Culture bound psychotic syndromes.

UNIT 9: Disorders of adult personality and behaviour : Eating disorders, Sleep disorders, impulse control disorders, personality disorders, Sexual and gender identity disorders.

UNIT 10: Classification of mental disorders & Organic Mental Disorders

ICD-10 classification of mental disorders, DSM –IV TR classification of mental disorders. Delirium, dementia and amnesic disorders.

UNIT 11: Stress – related and somatoform disorders:

Generalized anxiety disorders, panic disorder, phobic disorders, obsessive compulsive

disorder, dissociative and conversion disorder, Somatization disorder, Hypochondriasis, Body dysmorphic disorder and pain disorder.

BLOCK IV: FACTORS AND ADJUSTMENT

UNIT 12: Addictive Disorders

Alcohol Dependence Syndrome – Features and Causes Other Drugs abused and harmful effects

UNIT 13: Causes and Risk factors for Abnormal Behaviour

Causality – Precipitating, Predisposing factors, Necessary, contributory and sufficient causes Feedback and Circularity in Abnormality Biological Factors –Neurotransmitters and Hormonal Imbalances, Genetic vulnerabilities, Temperament, Brain dysfunction Psychosocial factors – Role of early deprivation, Trauma, Inadequate Parenting, Marital Discord and Maladaptive peer relationships Sociocultural Factors – Sociocultural environment, Crowding Effects, Poverty, Marginalization, and other pathogenic societal influences Diathesis-Stress models for understanding human problems

UNIT 14: Adjustment Disorders

Characteristics of Adjustment Disorders – Reactions to Common Life Stressors- Characteristics of Post Traumatic Stress Disorder – Rape, Natural Disaster

References

1. Carson,R.C., Butcher,J.N and Mineka,S.(2004). Abnormal psychology. 13th Edition. New Delhi: Pearson Education.
2. Alloy,L.B.,Riskind,JH., and Manos,M.J.(2006). Abnormal Psychology – Current Perspectives.9th Edition. New Delhi: Tata McGraw-Hill Edition.
3. Barlow,D.H. and Durand,M.V. (2000). Abnormal Psychology. 2nd Edition. New Delhi: Thomson Publication.
4. Bootzin,R.B.,Acocella,J.R. and Alloy,L.B. (1993). Abnormal Psychology– Current perspectives.6th Edition, International Edition, Tata Graw – Hill Inc., USA.
5. Sue,D.,Sue,,D and Sue.S. (1990). Understanding Abnormal Behaviour. 3rd Edition, Houghton Mifflin Co.
6. Wright, R. (1995, August 28). The evolution of despair. Time, 146 (9), 50-57.
7. Davidson and Neal (1996). Abnormal psychology. Revised 6th Edition, John Wiley Sons
8. World Health Organization. (2008). ICD-10: International statistical classification of diseases and related health problems (10th Rev. ed.). New York, NY: Author.
9. American Psychiatric Association. (2000). Diagnostic and statistical manual of mental disorders (4th ed., text revision). Washington, DC: Author.
10. Barlow H. David and Durnad V. Mark(1999) – Abnormal Psychology; India, Brooks/Cole Publishing Company.

Course Code	Title of the Course
36342	ENVIRONMENTAL PSYCHOLOGY

BLOCK I: CONCEPT OF ENVIRONMENTAL PSYCHOLOGY

UNIT 1: Introduction

The nature and scope of environmental psychology – Role and functions of environmental psychologists – ways that environmental psychology has changed the world – understanding ordinary landscapes – psychological benefits of nature

UNIT 2 : Environmental psychology

Introduction: Nature, scope, history and focus of environmental psychology; Scientific method; models and theories of environment behavior relationship.

UNIT3: Environmental perception and cognition

Environmental perception; spatial cognition; environmental values and attitudes, attachment and identity; appraisal and assessment, personal space, privacy and territoriality.

UNIT 4: Environmental stress and health

Environmental stress, crowding, noise and overpopulation; effects of physical environment on health.

BLOCK II: PROBLEMS AND SOLUTIONS

UNIT 5: Weather and climate issues

Weather and climate, seasonality, natural and technological disasters, environmental risk perception.

UNIT6 : Environmental problems and solutions

Psychology of environmental problems; sustainability, common dilemma, solution to environmental problems, sustainable design; designing more habitable environments..

UNIT 7: Theoretical Orientations

Social psychological perspective – Urie Bronfenbrenner – Baker's environmental psychology.

UNIT 8: Spatio – physical dimensions of behavior

Personal space – territoriality and crowding – urban environment and stress – noise, pollution, commuting.

BLOCK III: PERCEPTION AND PLANNING

UNIT 9: Towards better environment

Planning – role of media – practitioners, NGO's contribution to changing behavior to save the environment.

UNIT 10: Sustainability

Environmental degradation – resource overconsumption, pollution, climate change – human health and well being connected with environmental health – reciprocal relationship between human beings and natural world.

UNIT 11 :Public reactions to pollution

Environmental Perception, Cognition and Attitudes. Elementary Psychophysics. Perception : Theories of Environmental Perception. Environmental Cognition, Environmental Attitudes, Changing Attitudes.

BLOCK IV: BEHAVIOURS AND RESEARCH METHOD

UNIT 12 : Psychology of stress. Researching stress

The Environmental context. Moderators of stress response. The role of stress in understanding organism-environmental relationships

UNIT 13: Behaviours disturbing Environmental Stressors

Physical stressors : Ambient Temperature. Littering, Humidity, Sunlight, Wind, Air and Water. Ion Concentration. The Atmospheric stressors : Carbon-dioxide, Carbon-Monoxide, Ozone. Tobacco smoke as a pollutant. Psychological Stressors : Noise :The Ubiquitous Pollutant : Noise in the work place. Noise in the living environment, noise in the laboratory Noise and social behavior : Individual Difference in response to Noise. Noise in schools and hospitals. Noise and Law.

UNIT-14: Research Methods in Environmental Psychology

Evaluating the adequacy of environmental research.

References

1. Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50: 179-211.
2. Kaplan, S. & R. Kaplan (2009). Creating a larger role for environmental psychology: The Reasonable Person Model as an integrative framework. *Journal of Environmental Psychology*.
3. Stern, P. (2000). Toward a coherent theory of environmentally-significant behavior. *Journal of Social Issues*, 56(3):407-424.
4. Steg, L., G. Perlaviciute, E. van der Werff & J. Lurvink (2014). The significance of hedonic values for environmentally relevant attitudes, preferences, and actions. *Environment and Behavior*, 46(2): 163-192.
5. Nisbet, M. C. (2010). Study finds that fear won't don't do it: Why most efforts at climate change communication might actually backfire. Retrieved 1 December 2014 from bigthink.com

Course Code	Title of the Course
36343	POSITIVE PSYCHOLOGY

Learning Objectives

- To understand basic concepts of positive psychology and its relationship to other branches of psychology
- To gain fundamental understanding of well-being and happiness in the context of positive psychology
- To grasp basic cognitive states and processes in positive psychology
- To transfer the theoretical concepts into practical setting
- To develop an awareness of applications and implications of positive psychology concepts and theories
- To equip himself/herself with the skill and competence to apply positive psychology principles in a range of environments to increase individual and collective wellbeing

BLOCK I: BASIC CONCEPTS OF POSITIVE PSYCHOLOGY

UNIT 1 : Introduction

Positive psychology: Definition; goals and assumptions; Relationship with health psychology, developmental psychology, clinical psychology

UNIT 2: Positive Psychology

Introduction and historical overview of Positive Psychology, Positive prevention and positive therapy Module

UNIT 3 : Foundations of happiness

The meaning and measure of happiness – the science of happiness – biological foundation of happiness – the happiness system – the malleable brain – the secret of smiling – positive feeling as a compass – positive traits.

UNIT 4: Emotional intelligence, Well-being and Happiness

Positive emotions: Broaden and build theory; Cultivating positive emotions; Happiness- hedonic and Eudaimonic; Well- being: negative vs positive functions; Judgement and decision making; Subjective well –being: Emotional, social and psychological well-being; Model of complete mental life

BLOCK II: PROCESS OF WELL BEING

UNIT 5: Positive Cognitive States and Processes

Resilience: Developmental and clinical perspectives; Sources of resilience in children; Sources of resilience in adulthood and later life; Optimism- How optimism works; variation of optimism and pessimism; Spirituality: the search for meaning (Frankl); Spirituality and well- being; Forgiveness and gratitude

UNIT 6 :Applications of Positive Psychology

Positive schooling: Components; Positive coping strategies; Gainful employment Mental health: Moving toward balanced conceptualization;

Lack of a developmental perspectives.

UNIT 7: Subjective well-being

The science of happiness and life satisfaction, Resilience in Development, Concept of flow, Positive affectivity, Social construction of self-esteem 11 Module

BLOCK III: ROLE IN POSITIVE PSYCHOLOGY

UNIT 8 Role of personal control in Adaptive

Functioning Optimism, Hope, Self efficacy, goal-setting for life and happiness Module

UNIT9: Interpersonal relationship

Enhancement of closeness, compassion, forgiveness and gratitude, love, empathy and altruism Module

UNIT 10: Positive response to loss Role of humour

Spirituality Module 6: Application of Positive Psychology Living well at every stage of life, Positive Psychology for children, Positive schooling, Ageing well.

UNIT11:Strategies to enhance happiness

Enhancing pleasure, engagement and meaning-making; self-related processes.

BLOCK IV: CHALLENGES

UNIT12: Character strengths and virtues

Classification, assessment and nurturance; barriers in developing strengths and virtues.

UNIT13: Meeting life challenges

Nature, type and sources of stress, individual interpretations and responses, coping strategies and their assessment, promoting healthy coping strategies and life skills. **UNIT 14: Subjective well-being**

Concept and indicators, life satisfaction and happiness, determinants of happiness; theoretical frameworks.

References

1. Snyder, C.R. & Lopez, S.J. (2002). Handbook of positive psychology. (eds.). New York: Oxford University Press.
2. Baumgardner, S.R & Crothers, M.K.(2009). Positive Psychology. U.P: Dorling Kindersley Pvt Ltd.
3. Carr, A. (2004). Positive psychology, The science of happiness and human strengths. New York: Routledge.
4. Singh, A.(2013). Behavioral science: Achieving behavioral excellence for success. New Delhi: Wiley India Pvt Ltd.

Course Code	Title of the Course
363441	Elective: Health Psychology

Learning Objectives

- To explain the concepts of health, illness and wellness.
- To distinguish between the biopsychosocial and biomedical models of health, including the advantages and disadvantages of each.
- To describe the various research designs employed by health psychologists.
- To define key concepts listed in the textbook.
- To explain the characteristics of the patient-centered medical home and its relationship to the biopsychosocial model of health

BLOCK I: CHALLENGES

UNIT1: Introduction to Health Psychology

Need and significance- History- Health, disease, illness, well-being and quality of life- contributions.

UNIT 2: Health Psychology –

Introduction Define health psychology, Mind-body relationship- a brief history, Need for health psychology, Biopsychosocial model in Health Psychology.

UNIT3: Health Behaviour

The concept of Health Literacy, health behavior; factors influencing health behaviours, modification of health behavior, changing health beliefs, cognitive- behavioural approaches, Health enhancing behaviours

UNIT4: Becoming ill and Getting Medical Treatment

Health Services – Perceiving and Interpreting systems – Using and misusing health services – The Patient-Practitioner relationship – adhering to medical advice- The hospital – Being hospitalized – Psychological problems of hospitalized patients.

BLOCK II: HEALTH MANAGEMENT

UNIT5: Theoretical basis for changing health habits

Attribution Theories- Health- Locus of Control-Health Belief Model-Protection - Motivation Theory- Theory of Planned Behavior- Social Cognitive Theories- Health Action Process Approach- Trans theoretical Change Model- Models of Prevention.

UNIT 6: Stress Management:

Stress - Definitions- Models of Stress – Theories of Stress - Stress reactions – Coping and Stress Management techniques- Pain and its management - Psychological reactions of a patient to loss – Stages of Acceptance by Kubler-Ross.

UNIT 7: Management of ill and Yoga

Management of Chronic and Terminally ill – Quality of Life – Social support and rehabilitation. Role of Indian Treatment – Yoga Asanas – Principles in Yoga

Practice – Pranayama.

BLOCK III: CONCEPT OF PREVENTION

UNIT 8 Health Psychology

Concept, Assumptions, Models (Biomedical and Biopsychosocial)

UNIT 9 Theories

Social Cognitive Theory, Theory of Planned Behavior, Health Belief model, Protection – motivation theory, Trans – theoretical model of behavior change, Self-regulatory model, latest trends.

UNIT 10 Health Promotion and Illness Prevention

Health and Behavior; Changing health habits; Cognitive behavioural approaches to health behavior change.

UNIT11: Health Care System

Indian Scenario, Attitude of Health Professionals, Burnout in health professionals, Designing health care work environment, Future challenges for health care, Growth of Health Psychology.

BLOCK IV: MANAGEMENT SYSTEM

UNIT 12: Pain Management Control of pain

some distinctions in the clinical management of pain, pain control techniques. The management of chronic pain, the placebo effect, Psychological control and management of discomfort, Control based interventions with medical patients, individual differences in reactions to control.

UNIT 13: Psychophysiological disorders

Personality disposition. CHD, Asthmatics, Allergy, Eczema, Hding, Rheumatoid Arthritis, Peptic Ulcer, Diabetes and menstrual disorders

UNIT14: Psychoneuroimmunology

The immune system- immunocompetence/ immunocompromise.. Coping resources as moderators of the stress. Immune functioning relationship

References

1. Shelley E. Taylor. Health Psychology Third Edition. McGraw Hill International Editions, 1995.
2. Swaminathan, V.D, Latha Sathish, Psychology for Effective Living, Department of Psychology, University of Madras.
3. Brannon, J. & Feist, J. (1999). Health Psychology: An Introduction to Behavior and Health(4th ed,) Wadsworth Thomson Learning
4. Roberts, R., Towell, T. & Golding, J.F. (2001). Foundations of Health Psychology. Palgrave Houndmills, New York.
5. Taylor, E. (2006). Health Psychology. New Delthi: Mc Graw Hills Inc.

Course Code	Title of course
363442	Organisational Psychology

BLOCK I: BASIC CONCEPTS

UNIT1: Organizational Behaviour

Meaning – Elements – Need – Approaches – Models – Global scenario; Individual Behaviour: Personality & Attitudes- Development of personality - Nature and dimensions of attitude - Organizational Commitment – Learning – Attitudes – Perception – Motivation – Ability – Their relevance to organizational behavior.

UNIT 2: Group Behaviour

Theories of Group Formation - Formal Organization and Informal Groups and their interaction- Importance of teams - Formation of teams - Team Work- Group dynamics – Group norms – Group cohesiveness – Their relevance to organizational behavior.

UNIT 3: Organizational Power and Politics

Organizational Power: Definition, Types of powers, Sources and Characteristics – Effective use of power- Organizational Politics: Factors and Impact.

UNIT 4: Organizational Stress and Conflict Management

Stress Management: Meaning – Types – Sources – Consequences – Management of stress

BLOCK II: PROCESS AND STRATEGIES

UNIT 5: Organizational conflict

Constructive and Destructive conflicts - Conflict Process - Strategies for encouraging constructive conflict - Strategies for resolving destructive conflict.

UNIT 6: Organizational Dynamics

Organizational Efficiency, Effectiveness and Excellence: Meaning and Approaches – Organizational Culture – Meaning, significance – Organizational Climate – Implications on organizational behavior.

UNIT 7: Communication within Organization

Meaning and Process of Communication. Models and Perspectives of Communication in organizations. Communication barriers. Types of Communication.

UNIT 8: Organizational Socialization

Organizational Socialization – Definition, Dimensions, Stages Role of the Workplace Counsellor at each Stage

BLOCK III: BEHAVIOURS

UNIT 9: Individual Behaviour in Organizations

Productive and Counterproductive Behaviour in Organizations – definitions Job Satisfaction Employee Absenteeism Employee turnover Occupational Stress

UNIT 10 : Special groups in organisational counselling

Chronic absentees • Accident prone • Employees with family problems • Employees with alcoholism & drug addiction • Maladjusted employees • Indisciplined employees

UNIT 11: Group Behaviour in organizations

Definition and Characteristics of Groups Stages of Groups Impact of Groups on Individual Group Effectiveness – Determinants and Enhancement Intergroup Interactions – Types and patterns Intergroup Conflicts – Reduction Strategies

BLOCK IV: WORKPLACE CULTURE

UNIT 12 : Leadership Behaviour

Definition and theories Models of leadership behaviour

UNIT13: Stress and worker Well-Being

Work place Stress, Consequences of stress, theories of Stress, reducing and managing stress, Violence at work, Work Motivation theories, quality of work life, turnover, absenteeism, job involvement and commitment, Equal Employment Opportunity.

UNIT 14: Organisational Culture

Functions - Organisational Change and its effects –Managing Change and Resistance to change – Organisational Structure – Designs - Organizational Behaviour Modification process - Quality of Work Life – Employee Assistance Programs

References

1. Fred Luthans, Organizational Behaviour, McGraw-Hill/Irwin, 2006.
2. Stephen P. Robbins, Organizational Behaviour, Prentice Hall; 2010
3. Keith Davis, Organizational Behavior: Human Behavior at Work, McGraw Hill, 2010
4. Griffin and Moorhead, Organizational Behavior: Managing People and Organizations, 2006.
5. Judith R. Gordon, Organizational Behavior: A Diagnostic, Prentice Hall, 2001.
6. K.Aswathappa, Organizational Behaviour, Himalaya Publishing, Mumbai, 2010
7. Judith R. Gordon, A Diagnostic Approach to Organisational Behaviour, Allyn & Bacon, 1993.
8. Jex, S. M. (2002). Organizational Psychology: A Scientist-Practitioner Approach. John Wiley and Sons. Inc, NewYork.
9. . Arnol J., & Robertson, I .T.,&Coopen, C. L. (1995). Work Psychology- Understanding human behaviour in workplace. London: Mcmillan.
10. John W. Newstrom and Keith Davis – Organizational Behaviour – Human Behaviour at Work. 10thed. Tata McGraw Hill, 2002.

M.Sc –(Microbiology)

Sem	M.Sc Microbiology		Cr.	Marks		Total
	Course Code	Title of the course		Int.	Ext.	
FIRST YEAR						
I	36411	General Microbiology	4	25	75	100
	36412	Microbial Biochemistry	4	25	75	100
	36413	Microbial Physiology	4	25	75	100
	36414	Lab I- General Microbiology, Microbial Physiology and Biochemistry	4	25	75	100
			16	100	300	400
II	36421	Microbial Genetics	4	25	75	100
	36422	Molecular Biology & r DNA Technology	4	25	75	100
	36423	Food & Dairy Microbiology	4	25	75	100
	36424	Lab II-, Microbial Genetics, Molecular Biology & r DNA Technology, Food & Dairy Microbiology	4	25	75	100
			16	100	300	400
SECOND YEAR						
III	36431	Immunology	4	25	75	100
	36432	Medical Microbiology	4	25	75	100
	36433	Environmental & Agricultural Microbiology	4	25	75	100
	36434	Lab III- Immunology, Medical Microbiology and Environmental & Agricultural Microbiology	4	25	75	100
			16	100	300	400
IV	36441	Bioprocess Technology	4	25	75	100
	36442	Microbial Biotechnology	4	25	75	100
	36443	Bioinformatics and Biostatistics	4	25	75	100
	36444	Lab IV- Industrial Microbiology & Microbial biotechnology	4	25	75	100
				16	100	300
	Grand Total		64	400	1200	1600

**I YEAR – I SEMESTER
COURSE CODE: 36411**

GENERAL MICROBIOLOGY

Objective

1. To inculcate knowledge on fundamentals of microorganisms.
2. To learn the structural organization, morphology and reproduction of microbes.
3. To know the principles of Microscopy and advancements in Microscopy.

Outcome

1. Knowledge on historical perspective of Microbiology.
2. Basic knowledge on different structure of microbes.
3. Ideas on different type of microscope.

BLOCK-1: History and Classification of Microorganisms

Unit I:

Introduction to Microbiology, Haeckel's three-kingdom concept, Whittaker's Five-kingdom concept, Three-domain concept of Carl Woese.

Unit II

Classification of Bacteria according to Bergey's Manual.

Unit III

Fungi: Classification of fungi based on Alexopoulos system. - characteristics of Fungi, Industrial uses of yeast and moulds.

BLOCK-2: Microscopy, Staining techniques, Growth and Preservation methods

Unit IV

Simple, Compound, Dark-field, Phase contrast, Fluorescent and Electron microscopes. (SEM & TEM), Confocal microscopy – Principles and their applications.

Unit V

Stains and staining techniques: Simple, Differential, Structural staining methods and Imaging techniques.

Unit VI

Auxenic and synchronous, aerobic and anaerobic, Culture media and Nutritional types, Growth curve, Generation time and growth kinetics. Factors influencing microbial growth.

Unit VII

Preservation methods of microbes for storage, Sterilization and disinfection.

BLOCK-3: Prokaryotic and Eukaryotic cell structure

Unit VIII

Prokaryotic cell structure & Organization, Cell membrane, Plasma membrane, Cytoplasmic matrix, Inclusion bodies, Ribosome, Nucleoid, Prokaryotic cell wall, Capsule, Slime layers, S layers, Pili and Fimbriae, Flagella and Motility. Bacterial endospores. Archaeal cell structures.

Unit IX

General characters and classification of Blue green Algae (Cyanobacteria) Macroalgae - Biological and Economic importance of algae. Protozoa – structural characteristics, classification and reproduction.

Unit X

Eukaryotic cell structure and its organelles. Lichens and Microalgae- Structural organization and their properties.

BLOCK-4: Virology

Unit XI

Nomenclature and Classification of viruses.

Unit XII

Distinctive properties of viruses; morphology and ultrastructure. Capsids and their arrangements- types of envelopes and their composition

Unit XIII

Viral genome, their types and structures. Life cycle of virus.

Unit XIV

Virus related agents (viroids, prions).

References

1. Tortora, G.J., Funke B.R, and Case C.L. (2010). **Microbiology an Introduction** (10th Edition), Benjamin Cummins, USA.
2. Dubey, R.C. and Maheswari, D.K. (2013). **A Textbook of Microbiology** (Revised Edition), S.Chand and Company Ltd., New Delhi.
3. Prescott, L.M., Harley, J.P. and Klein, D.A. (2014). **Microbiology** (9th Edition), McGraw Hill Publishers, Boston.
4. Brock, T.D., Smith, D.W. and Madigan, M.T. (2002). **Biology of Microorganisms** (Fourth Edition) Prentice Hall International, London.
5. Stanier, R.Y., Ingraham, J.L., Wheels, M.L. and Painter, P.R. (1999). **General Microbiology**, Mac Millan Educational Limited, London.
6. Boyd, R.F. (1998). **General Microbiology**, MosbyCollege Publishing, St. Louis.
7. Nester, E.W., Roberts, C.V. and Nester, M.T. (1995). **Microbiology**, A Human Perspective. IWOA, U.S.A.
8. Pelzcar, M.J., Chan, E.C.S. and Kreig, N.R. (1993). **Microbiology**, McGraw Hill Inc., New Delhi.
9. Carter, J.B and Saunders, V.A. (2007). **Virology- Principles and Applications**. John Wiley and Sons Ltd, UK.
10. Hull, R. (2002). **Mathews Plant Virology**. (4th Edition. Academic Press- A Harcourt Science and Technology company, New York.



I YEAR – I SEMESTER
COURSE CODE: 36412

MICROBIAL BIOCHEMISTRY

Objective

1. To know the structural organization of bio-molecules.
2. To learn the characteristics of nucleic acids and enzymes.
3. To acquire knowledge on secondary metabolites.

Outcome

1. Knowledge on metabolism of bio – molecules.
2. General Information about nucleic acids, enzymes and vitamins.
3. Clear idea on secondary metabolites.

BLOCK-1: Carbohydrates and Proteins

Unit I

Carbohydrates- Classification, Structure, properties of monosaccharides and disaccharides. polysaccharides - starch, cellulose, agar- agar and peptidoglycan.

Unit II

Metabolism and its regulation- Gluconeogenesis, glycolysis, kreb's cycle, pentose phosphate pathway or hexose mono phosphate shunt, glyoxylate cycle and Entner Doudroff pathway.

Unit III

Amino acid and proteins- Classification based on structure, polarity, biological importance and reactivity, physical properties and chemical reactions.

Unit IV

Biosynthesis of amino acids – an overall view. Protein - Classification, physical and chemical properties. Structure – primary, secondary, tertiary and quaternary structure of proteins.

BLOCK-2: Lipids and Nucleic acids

Unit V

Lipids and fatty acids- Classification and properties. Phospholipid and cholesterol synthesis in *E.coli*.

Unit VI

Lipids and fatty acids metabolism - α , β and γ oxidation of fatty acids and lipid peroxidation.

Unit VII

Nucleic acids- Structure, synthesis and degradation of purines and pyrimidines.

BLOCK-3: Enzymes

Unit VIII

Enzymes- Classification, chemical nature and properties of enzymes. Factors affecting enzyme activity and Active site of enzyme.

Unit IX

Enzyme inhibition- Reversible, irreversible, Allosteric inhibition, Enzyme specificity and co-enzymes.

Unit X

Mechanism of enzyme action- Michaelis - Menten hypothesis, Lock and key model, induced fit theory. Isozyme, ribozyme and abzyme.

BLOCK-4: Pigments, Secondary metabolites and Vitamins

Unit XI

Microbial pigments – chlorophyll, fluorescence, phosphorescence, bacteriochlorophyll, rhodopsin, carotenoids and phycobiliproteins.

Unit XII

Secondary Metabolites- Antibiotics – Classification based upon mode of action. Biosynthesis and regulation of penicillin and streptomycin.

Unit XIII

Microbial Toxins – *Salmonella* toxin, *Cholera* toxin, Botulism toxin and Aflatoxin.

Unit XIV

Vitamins – Classification, Properties and functions, Vitamins as Co – factors and Co – enzymes.

References

1. David, A. B. (2009). **Nutritional biochemistry of Vitamins**, Cambridge.
2. Deb, A.C. (2006). **Fundamentals of Biochemistry**, New Central Book Agency Pvt. Ltd., Kolkata.
3. Donald Voet and Judith Voet. G. (2011). **Biochemistry** (4th Edition), John Wiley and Sons, Inc. New York.
4. Stryer, L. (2010). **Biochemistry** (7th Edition), W.H. Freeman and Company, New York.
5. Satyanarayana, U. and Chakrapani, U. (2013). **Biochemistry** (4th Edition) Book and Allied Pvt. Ltd., Kolkata.
6. Jain, J.L. (2008). **Fundamentals of Biochemistry** (5th Edition), S. Chand and Company Ltd, NewDelhi.
7. Madigan, M.T., Martinka, M., Parker, J. and Brock, T.D. (2000). **Biology Microorganisms** (12th Edition), Prentice Hall, New Jerry.
8. Moat, A.G. and Foster, W. (2002). **Microbial Physiology** (4th Edition), John Wiley and Sons, New York.
9. Nelson, D.L. and Cox, M.M. (2012). **Lehingers's Principles of Biochemistry** (6th Edition), Mac Millan worth Publishers, New Delhi.
10. Srivastava, M.L. (2008). **Microbial Biochemistry**, Narosa Publishing House, New Delhi.



I YEAR – I SEMESTER
COURSE CODE: 36413

MICROBIAL PHYSIOLOGY

Objective

1. To develop a sufficient background to students about the growth of Microbes.
2. To learn the microbial metabolism.
3. To acquire knowledge on microbial stress response.

Outcome

1. Knowledge on growth of Microbes.
2. General Information about microbial metabolism.
3. Clear idea on microbial communications.

BLOCK-1: Bacterial Growth and Nutrition

Unit I

Growth of Bacteria- Phases of growth. Growth kinetics - batch culture, continuous culture and synchronous culture. Factors affecting growth - nutrition, aeration, temperature and pH.

Unit II

Nutritional diversity in microorganisms, nutritional types - autotrophy, heterotrophy, chemotrophy, phototrophy, lithotrophy and organotrophy. Nutrition –essentiality of major and minor elements.

Unit III

Chemotrophism and their importance, reverse electron transport, CO₂ assimilation and reductive acetyl COA pathway.

Unit IV

Chemoheterotrophism - Acetogens, methanogens, methanogenesis and its importance. Physiology and economic importance of methylotrophs.

BLOCK-2: Bacterial Photosynthesis, Nitrogen metabolism and Stress response

Unit V

Bacterial Photosynthesis- General types of microbial photosynthesis, oxygenic and anoxygenic. Structure of photosynthetic pigments – chlorophylls, bacteriochlorophyll, carotenoids and phycobilins.

Unit VI

Photosynthetic bacteria - green sulphur and purple. Mechanism of photosynthesis non-cyclic and cyclic electron transport. Photo phosphorylation.

Unit VII

Microbial stress responses- Osmotic stress and osmoregulation, Aerobic to anaerobic transitions, Oxidative stress, pH stress and acid tolerance, Thermal stress and heat shock response, Nutrient stress and starvation stress.

BLOCK-3: Microbial Metabolism

Unit VIII

Nitrogen metabolism- Nitrogen cycle - ammonification, nitrification, denitrification and nitrogen fixation. Nitrogenase enzyme, physiology of nitrogen fixation in symbiotic and free living bacteria.

Unit IX

Aerobic respiration- TCA cycle- intracellular location and reactions, amphibolic reactions. Glyoxalate cycle.

Unit X

Mechanisms of substrate – level phosphorylation. Respiratory electron transport in mitochondria and bacteria. Mechanism of oxidative phosphorylation.

Unit XI

Anaerobic respirations- sulphate, nitrate, carbonate respirations and their ecological significance.

BLOCK-4: Bacterial Transport and Quorum sensing

Unit XII

Bioenergetics- Entropy, enthalpy, electron carriers, artificial electron donors, inhibitors, uncouplers, energy bond and phosphorylation.

Unit XIII

Transport across membrane - diffusion, osmosis, active transport and group translocation.

Unit XIV

Quorum sensing- Mechanism and Signaling molecules.

References

1. Madigan, M.T., Martinka, M., Parker, J. and Brock, T.D. (2000). **Biology Microorganisms** (12th Edition), Prentice Hall, New Jersey.
2. Moat, A.G. and Foster, W. (2002). **Microbial Physiology** (4th Edition), John Wiley and Sons, New York.
3. Postgate, J. (1998). **Nitrogen Fixation**, (3rd Edition), Cambridge University Press.
4. Salisbury, F.W. and Ross, W. (1992). **Plant Physiology** (4th Edition), Wardsworth Publishing Company, California.
5. Deb, A.C. (2006). **Fundamentals of Biochemistry**, New Central Book Agency Pvt. Ltd., Kolkata.
6. Donald Voet and Judith G. Voet. (2011). **Biochemistry** (3rd Edition), John Wiley and Sons, Inc. New York.
7. Stryer, L. 2010. **Biochemistry** (7th Edition), W.H. Freeman and Company, New York.
8. Nelson, D.L. and Cox, M.M. (2012). **Lehingers's Principles of Biochemistry** (6th Edition), Mac Millan worth Publishers, New Delhi.
9. Srivastava, M.L. (2008). **Microbial Biochemistry**, Narosa Publishing House, New Delhi.
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**I YEAR – I SEMESTER
COURSE CODE: 36414**

LAB I- GENERAL MICROBIOLOGY, MICROBIAL PHYSIOLOGY & BIOCHEMISTRY
Suggested Laboratory Exercises:

GENERAL MICROBIOLOGY

1. Principle and methods of sterilization.
2. Preparation of media: nutrient broth, nutrient agar plate, and soft agar.
3. Pure culture techniques: streak plate, spread plate and pour plate.
4. Motility determination – Hanging drop method.
5. Isolation and enumeration of bacteria from different environmental samples.
6. Enumeration of bacteria - viable count (plate count) and total count (Haemocytometer count).
7. Direct microscopic observation of fungal spores and mycelium.
8. Fungal slide culture.
9. Staining method: simple, negative, Gram's staining and spore staining.

BIOCHEMISTRY

10. Measurement of growth rate and generation time by turbidometry method.
11. pH metry -Preparation of buffer.
12. Spectrophotometry- Wavelength scan.
13. Chromatography - Paper and Thin layer chromatography - separation of amino acid.

MICROBIAL PHYSIOLOGY

14. Carbohydrates: Quantitative estimation of glucose, glycogen from bacterial and yeast cell.
15. Protein- Quantitative estimation of protein from bacterial yeast cell.
16. Enzyme- Estimation of alkaline phosphatase activity.
17. Environmental factor- Effect of temperature and pH on bacterial growth.
18. Physiological groupings of bacteria- Isolation of saccharophilic microorganisms (starch hydrolysis)- Proteolytic activity of microorganisms (casein and gelatin hydrolysis)- Lipolytic activity of microorganisms.
19. Utilization of Unusual compounds- Microbial degradation of azodyes.
20. Bioenergetics- Cytochrome oxidase assay - Catalase assay.
21. Nitrogen metabolism- Nitrate reduction test.

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**I YEAR – II SEMESTER
COURSE CODE: 36421**

**MICROBIAL GENETICS
Objective**

1. To extend the knowledge on molecular basis of mutation at microbial level.
2. To focus on gene regulation and expression mechanisms.
3. To understand the principles role of plasmids and gene transfer methods.

BLOCK-1: Mutation, DNA damage and repair

Unit I

Mutation and its types, Mutation rate and its determination and Mutagenesis.

Unit II

Mutagens-Types, Physical mutagens, DNA reactive chemicals, base analogs, intercalating agents, metals and biological agents.

Unit III

DNA damages- Deamination of bases, alkylation, damage due to reactive oxygen, UV induced damage.

Unit IV

Repair pathways (Methyl-directed mismatch repair, Nucleotide excision repair, Base excision repair, recombinational repair, SOS inducible repair, specific repair for oxidative DNA damage, pyrimidine dimers and alkylation induced damage and adaptive response).

BLOCK-2: Bacterial Recombination

Unit V

Recombination- Types of recombinations, Models for Homologous recombination, Molecular mechanism of homologous recombination, Homologous recombination in eukaryotes, Mating type switching. Molecular mechanism for site-specific recombination. Biological roles of site specific recombination.

Unit VI

Conjugation- Conjugation by *E. coli* F factor, Structure of F-factor, Regulation of F-factor fertility, establishment of cell contact, DNA mobilization, transfer and separation of mating pair, Hfr conjugation and chromosomal transfer, Interrupted mating and conjugational mapping.

Unit VII

Transformation- Mechanism of Natural competence and transformation in *Bacillus subtilis* and *Streptococcus pneumoniae*. Transformation by inducing artificial competence, Gene linkage and mapping by transformation.

Unit VIII

Transduction- Generalized and specialized transduction.

BLOCK-3: Operon concept and Extra Chromosomal Materials

Unit IX

Gene concept- regulation of bacterial gene expression. Lactose system - coordinate regulation, Lac components, positive, negative regulation and catabolite repression.

Unit X

Tryptophan operon - attenuation. Arabinose operon and its regulation.

Unit XI

Plasmids- Types of plasmids - F, R & Col plasmids. Properties of plasmids – sex factors, drug resistant, colicinogenic. Agrobacterium Ti and broad host range plasmid.

BLOCK-4: Transposable Elements and Epigenetics

Unit XII

Detection and purification of plasmid DNA. Transfer of plasmid DNA. Replication of plasmid. Control of copy number, plasmid amplification, curing and incompatibility.

Unit XIII

Transposable elements- Types of transposable elements, Structure, genetic organization and mechanism of transposition of Tn5, Tn3 and related transposons, Bacteriophage Mu, Tn7 and IS911, Integrons, Retrotransposons.

Unit XIV

Epigenetics- Definition, Molecular basis, Mechanisms, Functions and Epigenetics in bacteria.

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I YEAR – II SEMESTER

COURSE CODE: 36422

MOLECULAR BIOLOGY & rDNA TECHNOLOGY

BLOCK-1: DNA and its replication, RNA and its types

Unit I

Discovery of DNA- Molecular basis of DNA as genetic material. Structure of DNA – A, B and Z form. Forms of DNA – DNA heteroduplex, circular, superhelical DNA, twisted circle. Properties of DNA - denaturation, renaturation, melting curve and hyperchromicity.

Unit II

Replication of DNA- semi conservative mode, Meselson - Stahl experiment. Enzymology of DNA replication - DNA polymerase I, II & III, topoisomerase I & II, helicase, primase, gyrase. Molecular basis of DNA replication - replication fork, origin, okazaki fragments. Types of replication - circular and theta.

Unit III

Structure of RNA - types of RNA - tRNA, mRNA and rRNA

BLOCK-2: Protein Synthesis & Cloning vectors

Unit IV

Transcription process in Prokaryotes- Initiation - promoters, upstream and downstream sequences, transcription factors. Elongation - RNA polymerase, sub units. Termination - Rho dependent and Rho independent, nus A protein. antitermination.

Unit V

RNA processing (post transcriptional modifications), inhibitors of transcription. Reverse transcription.

Unit VI

Cloning vectors – plasmids, cosmids, phasmids, phagemids, expression vectors, plasmid vectors – p^{BR}322 and p^{UC}18, integrating shuttle vector – YAC vectors, viral vector – SV 40 and adeno virus.

BLOCK-3: Gene Cloning

Unit VII

Cloning of human insulin, interferon in *E.coli*. Recombinant vaccine development – HBs Ag in yeast.

Unit VIII

Cloning for commercial production of antibiotics (Penicillin).

Unit IX

Cloning methodologies- α complementation, sticky and blunt end cloning. Cloning from mRNA – synthesis of cDNA, cloning cDNA– cDNA library. Cloning from genomic DNA – genomic library. Shot gun cloning.

Unit X

Screening of recombinant – phenotypic expression of characters. Blotting techniques –western, northern and southern. Mapping of human genes – Human genome project.

BLOCK-4: Molecular Techniques

Unit XI

PCR- gene amplification, primer designing, optimization, variation in the PCR (RAPD and RFLP)

Unit XII

DNA sequencing – Sanger – Coulsen’s method, Maxam Gilbert’s method, automated sequencing and micro array.

Unit XIII

Gene silencing and antisense technology- Types and mechanism of gene silencing. Genetic factors of silencing, formation of antisense mRNA, inhibition of gene expression by antisense RNA.

Unit XIV

Plant genetic engineering- Ti plasmid, CaMV vector, Direct DNA delivery methods – micro projectile bombardment, microinjection and electroporation.

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**I YEAR – II SEMESTER
COURSE CODE: 36423**

FOOD & DAIRY MICROBIOLOGY

BLOCK-1 Introduction to food microbiology

Unit I

General introduction of foods and related microorganisms.

Unit II

Intrinsic factors- Nutrient Content, pH and Buffering Capacity, Redox Potential, Antimicrobial Barriers and Constituents and Water Activity.

Unit III

Extrinsic factors- - Relative Humidity, Temperature and Gaseous Atmosphere.

BLOCK-2: Food contamination, Spoilage and Preservation

Unit IV

Contamination and spoilage of cereals, cereal products, fruits, vegetables, meats, meat products, fish, sea foods, eggs, poultry and canned foods.

Unit V

Food poisoning and food borne infections (bacterial, viral, fungal and protozoa), bacterial and fungal toxins.

Unit VI

General principles of food preservation- Physical and Chemical methods.

BLOCK-3: Dairy Microbiology, Microbial Products

Unit VII

Dairy microbiology- Normal flora of milk and milk products, Spoilage of milk and milk products.

Unit VIII

Fermented milk products- acidophilus milk, bifidus milk ,yoghurt manufacture of cheese and evolution of quality milk.

Unit IX

Microbial food fermentation- Fermentation in food processing, role of microorganisms in food fermentation.

Unit X

Microbial products of food; SCP, mushrooms, oriental foods Fermented beverages (fruit and cereal based).

BLOCK-4: Microbial enzymes, Quality control and Quality Assurance

Unit XI

Industrial production of enzymes- cellulases, amylases, proteases, phytases, pectinases, lipases and glucose isomerases.

Unit XII

Food borne disease outbreaks - Objectives of investigation, Field investigation, lab testing and preventive measures.

Unit XIII

Food sanitation – Microbiology of food plant sanitation, water and milk testing.

Unit XIV

Food laws and quality control – HACCP, Codex alimentarius, PFA, FPO, MFPO, BIS and AGMARK.

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COURSE CODE: 36424

MICROBIAL GENETICS, MOLECULAR BIOLOGY & r DNA TECHNOLOGY and FOOD & DAIRY MICROBIOLOGY

MOLECULAR BIOLOGY& r DNA TECHNOLOGY

1. Single colony isolation and checking for genetic markers.
2. Measurement of growth-one step growth curve using a T even phage.
3. Titration of phages (T4).
4. Induction of Lambda Phage.
5. Induced mutagenesis – UV.
6. Isolation of antibiotic resistant mutants.
7. Isolation of auxotrophic mutants.

MICROBIAL GENETICS

8. Isolation of specialized transducing phage.
9. Bacterial conjugation – transfer of drug resistant factor (Plasmid).
10. Transposon mutagenesis of chromosomal and plasmid DNA.
11. Isolation of plasmid and chromosomal (bacterial) DNA.
12. Quality and quantity checking of DNA by UV Spectrophotometer and Submarine agarose gel electrophoresis.
13. Gene cloning – Preparation of vector and passenger – Ligation – Preparation of competent cells – Transformation of *E.coli* with recombinant plasmids.
14. Selection of recombinants by blue white selection.
15. PCR amplification – Demo.

FOOD & DAIRY MICROBIOLOGY

16. Resazurin dye reduction test.
17. Phosphatase test.
18. Litmus milk reactions.
19. Potability analysis of drinking water.
20. Bacterial examination of water (qualitative and quantitative).
21. Membrane filtration technique.

References

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II YEAR – III SEMESTER
COURSE CODE: 36431

IMMUNOLOGY

Objective

1. To provide knowledge on human immunity system.
2. To understand the mechanism of antigen antibody reaction.
3. To inculcate the principles of vaccine development.

Outcome

1. Students acquire the information about immunity development.
2. Become an eminent in immunotechnology.
3. Able to understand the immunological reactions.

BLOCK-1: Immune system and Immune cells

Unit I

Basic concepts and terminologies in immunology. Haematopoiesis.

Unit II

Immune system- primary and secondary lymphoid organs: structure and functions and cells of immune system.

Unit III

Innate and acquired immune system- cells and molecules involves. Cell mediated and humoral mediated response. Role of Toll like receptors in innate immunity.

Unit IV

Maturation and Differentiation of T-cell and B-cell. T-cell and B-cell receptors.

BLOCK-2: cytokines, Antigen Antibody interactions

Unit V

Characteristics and functions of cytokines, haemokines.

Unit VI

Immunoglobulins- class, subclass, structure and fuction, Immunoglobulins genes- Organization and expression. Generation of antibody diversity.

Unit VII

Immunogenicity- Immunogens, adjuvants, epitopes, haptens and carriers.

Unit VIII

T dependent and T independent antigens. Strength of antigen-antibody interactions- affinity, avidity, valency, agglutination and precipitation.

BLOCK-3: Complement system and Major Histocompatibility Complex

Unit IX

Complement systems- mode of activation, classical and alternate pathway.

Unit X

Mechanisms of antigen processing and presentation-cytosolic and endocytic pathways. Antibody engineering.

Unit XI

Major histocompatibility complex (MHC)- structure and its interaction with peptide.

BLOCK-4: Hypersensitivity, Transplantation and Vaccines

Unit XII

Hypersensitivity reactions- Type I, II, III and IV. Autoimmune disorders.

Unit XIII

Organ transplantation and HLA tissue typing. Oncogenes and antioncogenes.

Unit XIV

Hybridoma and monoclonals. Vaccine – Introduction- types- live or attenuated, killed and DNA vaccines. Stem Cells and its clinical application- Human pluripotent stem cells (bone marrow, nerve cells, heart muscle cells and pancreatic islet cells).

References

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II YEAR – IV SEMESTER
COURSE CODE: 36432

MEDICAL MICROBIOLOGY

Objective

1. To inculcate on the role of normal flora and pathogenic microbes.
2. To understand the pathogenesis of various diseases.
3. To understand the various clinical microbiological techniques.

Outcome

1. Get information about various mechanisms of infection.
2. Knowledge on clinical lab techniques.
3. Acquire knowledge on control measures of diseases.

BLOCK-1: Introduction to Medical Microbiology

Unit I

Laboratory management – Safety in containment laboratory. Collection and transport of clinical samples.

Unit II

Microbiological examination of urine, blood, faeces, cerebrospinal fluid, throat swabs, sputum, pus and wound exudates.

Unit III

Normal flora of human systems – skin, respiratory tract, gastrointestinal tract and genitourinary tract. Nosocomial infections.

BLOCK-2: Bacterial diseases

Unit IV

General characters, pathogenesis, laboratory diagnosis and control measures of- Gram positive cocci disease – pharyngitis, pneumonia. Gram negative cocci– gonorrhoea.

Unit V

Gram positive non spore forming bacilli – nocardiosis, diphtheria. Gram positive spore forming bacilli- aerobic- anthrax and anaerobic- Tetanus (Lockjaw).

Unit VI

General characters, pathogenesis, laboratory diagnosis and control measures of- Gram negative nonspore forming bacilli- Aerobic- pertussis. Small gram negative facultative anaerobic bacteria – Yersiniosis.

Unit VII

Enteric Gram negative bacilli – Vibriosis, Salmonellosis. Acid fast bacteria – tuberculosis and leprosy. Cell wall less bacteria – pneumonia and Leptospirosis.

BLOCK-3: Viral and Fungal Diseases

Unit VIII

Influenza, Measles, Mumps, Chicken pox, Hepatitis A, B, C, D & E , Poliomyelitis, AIDS, Human Papilloma virus, Rabies and Yellow fever.

Unit IX

Dengue, Japanese Encephalitis, SARS and Swine Flu.

Unit X

Mechanism of pathogenesis and lab diagnosis of fungal diseases: Superficial Mycoses, Cutaneous Mycoses and Subcutaneous Mycoses.

Unit XI

Systemic mycosis, Opportunistic Mycoses and Mycotoxicosis.

BLOCK-4: Parasites, Newly Emerged Diseases and Control Mechanism

Unit XII

Mechanism of pathogenesis and lab diagnosis of Protozoology- Amoebiasis and Malaria.

Unit XIII

Classification of antibiotics based on mode of action- antibacterial (Penicillin), antiviral (Amantidine), antifungal (Amphotericin) and antiparasitic drugs (Quinine and Metraindazole).

Unit XIV

Emerging and re-emerging infections (Chickungunya, Zika virus, H1N1 and Ebola). National programmes in prevention of infectious diseases.

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1. Anathanarayan, R., and Jeyaram Panikers, C.K. (2013). **Text Book of Microbiology** (9th Edition). Jain book depot, New Delhi.
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II YEAR – III SEMESTER
COURSE CODE: 36433

ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY

Objective

1. To create awareness on Environmental Microbiology.
2. To give knowledge on plant pathogen interaction and its control.
3. To inculcate on biofertilizer and biopesticides.

Outcome

1. Acquire knowledge on agriculture microbiology.
2. Understand the biogeochemical cycles prevail in environment.
3. Able to know about global environmental problems.

BLOCK-1: Ecosystem

Unit I

Environment and Ecosystems- Definitions, biotic and abiotic environment. Environmental segments. Composition and structure of environment. Conservation and Management.

Unit II

Concept of biosphere, communities and ecosystems. Ecosystem characteristics, structure and function. Food chains, food webs and trophic structures. Ecological pyramids.

Unit III

Eutrophication- Definition, causes of eutrophication, and microbial changes in eutrophic bodies of water induced by various inorganic and organic pollutants.

BLOCK-2: Waste water treatment, Xenobiotic degradation, Environmental problems

Unit IV

Types of solid Waste, Treatment of solid wastes -composting, vermiform composting, saccharification and gasification.

Unit V

Types of liquid Waste, Treatment of liquid wastes –primary, secondary and tertiary treatment- anaerobic (methanogenesis), aerobic, trickling, activated sludge and oxidation pond.

Unit VI

Microbiology of degradation of xenobiotics (heavy metals) in the environment- ecological considerations, decay behaviour, biomagnifications, degradative plasmids and substituted hydrocarbons.

Unit VII

Global environmental problems- Ozone depletion, UV-B, green house effect and acid rain, their impact and biotechnological approaches for management. Containment of acid mine drainage applying biomining [with reference to copper extraction from low grade ores].

BLOCK-3: Soil Microbiology and Biogeochemical cycle

Unit VIII

Soil as an environment for microorganisms- Classification of soil, physical and chemical properties of soil and structure of soil.

Unit IX

Microbial interactions between plants– phyllosphere, mycorrhizae, rhizosphere and symbiotic association in root nodules.

Unit X

Biogeochemical cycles - carbon, phosphorus and sulfur.

BLOCK-4: Plant Disease Control and Management

Unit XI

Plant pathogens and classification of plant diseases- Host-pathogen recognition and specificity. Principles of plant infection - entry of pathogen in to host, colonization of host, role of enzymes, toxins and growth regulatory substances.

Unit XII

Defense mechanisms in plants - Structural and biochemical - Molecular aspects of host defense reactions - Lipoygenase and other enzymes in the expression of disease resistance.

Unit XIII

Symptoms, Etiology, Epidemiology and management of the following plant diseases- Mosaic disease of tobacco, Bunchy top of banana, Bacterial blight of paddy and Grassy shoot of sugar cane.

Unit XIV

Plant disease management – exclusion, evasion, eradication and crop rotation. Sanitation - physical, chemical and biological control. Plant disease forecasting. Biotechnological approaches to disease management.

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II YEAR – III SEMESTER
COURSE CODE: 36434

**IMMUNOLOGY, MEDICAL MICROBIOLOGY, ENVIRONMENTAL & AGRICULTURE
MICROBIOLOGY**

Suggested Laboratory Exercises:

IMMUNOLOGY

1. Collection of venous blood from human, separation and preservation of serum/plasma.
2. Blood Grouping.
3. Precipitation method- Immunodiffusion and Immunoelectrophoresis.
4. Latex Agglutination test.
5. Widal test (Tube and Slide Test).
6. ELISA.
7. Western Blotting.

MEDICAL MICROBIOLOGY

8. Isolation and identification of - Respiratory tract infections- *Pseudomonas aeruginosa*, Urinary tract infection- *E. coli*/ *K. pneumoniae*.
9. Fungal skin pathogens- *Dermatophytes* and *Candida*.

ENVIRONMENTAL & AGRICULTURE MICROBIOLOGY

10. Enumeration of microorganism from air.
11. Settle plate technique.
12. Air sampling technique.
13. Estimation of dissolved oxygen (DO), BOD and COD.
14. Isolation of free living nitrogen fixing bacteria from soil – *Azotobacter*.
15. Isolation of Symbiotic nitrogen fixing bacteria from root nodule – *Rhizobium*.
16. Examination of Plant Bacterial diseases- Sheath blight of rice and Wilt of potato
17. Fungal diseases – Late blight of potato and Wilt of cotton.
18. Viral diseases- Banana bunchy top virus and Tobacco Mosaic Virus.

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II YEAR – IV SEMESTER
COURSE CODE: 36441

BIOPROCESS TECHNOLOGY

Objective

1. To give knowledge on strain improvement methods.
2. To learn about upstream fermentation process.
3. To understand about downstream fermentation process.

Outcome

1. Students will get knowledge on strain improvement.
2. Enable them to work in fermentation industry.
3. Students will get idea on upstream and downstream fermentation process.

BLOCK-1: Introduction to Fermentation Technology

Unit I

An overview of fermentation technology, range of fermentation processes, primary and secondary metabolites and components of fermentation process.

Unit II

Industrial microorganisms- isolation, preservation, screening, strain improvement and maintenance.

Unit III

Formulation of industrial media- Medium requirements for fermentation processes, carbon, nitrogen, mineral sources, buffers, antifoam agents and medium optimization.

Unit IV

Stoichiometry of cell growth and product formation, Sterilization of media and fermenters, scale – up process and starter culture technology.

BLOCK-2: Fermentor and fermentations

Unit V

Basic design of a microbial fermentor, types of fermentation vessels. Aseptic operation and containment.

Unit VI

Body construction (stirrer glands, bearing, valves, steam traps) baffles, spargers and impellers.

Unit VII

Types of fermentations- batch, continuous, fed-batch, solid state and submerged.

Unit VIII

Aerobic and anaerobic, dual and multiple fermentations, their advantages and disadvantages.

BLOCK-3: Downstream processing

Unit IX

Importance of downstream processing in industrial fermentation processes. Problems and requirements of bio product recovery and purification.

Unit X

Downstream Processing- Recovery and purification of fermentation products- Removal of microbial cells and other solid materials, Foam separation, Precipitation, Filtration and Centrifugation.

Unit XI

Cell Disruption- Physical, Chemical methods, extractors, chromatography, membrane process, drying, crystallization and whole broth processing.

BLOCK-4: Fermentation Products and marketing

Unit XIII

A brief out lines of processes for the production of the following commercially important products – Organic acids- Citric acid, lactic acid. Amino acids- Glutamic acid, L – lysine. Solvents- Acetone, ethyl alcohol.

Unit XIV

Antibiotics- Streptomycin, penicillin and Vitamins- B12, Riboflavin.

Unit XII

Fermentation economics - Market potential, some effects of maintenance legislation on production of antibiotics and recombinant proteins.

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9. Patel A H. (2011). **Industrial Microbiology** (2nd Edition). Laxmi Publications.



II YEAR – IV SEMESTER
COURSE CODE: 36442

MICROBIAL BIOTECHNOLOGY

Objective

1. To provide knowledge on application of microorganisms using technologies.
2. To understand the production and mechanism of microbial products.

Outcome

1. Students acquire the information about various uses of microorganisms.
2. Become an eminent in production of biofertilizers and pesticides.
3. Able to understand the remediation process through microbes.

BLOCK-1: Introduction to Microbial and Algal Biotechnology

Unit I

Introduction to microbial biotechnology- Scope and applications in human therapeutics, agriculture, food technology, SCP and environment.

Unit II

Algal Biotechnology- Application of cell fusion, tissue culture and hybridization techniques in algae. Algae genomics. Genetic engineering of algae- construction of transformation and expression vectors, methods of gene introduction.

Unit III

Biotechnological applications of Algae in agriculture and environment.

BLOCK-2: Biological Control

Unit IV

Microbial Pesticides- Basic principle- Antagonism, Amensalism- Siderophores, Parasitism and Nematophagy.

Unit V

Microbial Herbicides – Formulation and their applications.

Unit VI

Microbial Insecticides- bacterial insecticide- *Pseudomonas*, *Bacillus* sp., *Bacillus thuringiensis*- toxins, BT cotton- viral insecticide- entomopathogenic fungi.

Unit VII

Pathogens- Antagonists, VAM fungi and modification of culture practices.

BLOCK-3: Commercially Important Products

Unit VIII

Cytokines, Human growth hormones, Tissue plasminogen activator and Factor VII.

Unit IX

Microbial polysaccharides and polyesters.

Unit X

Production, application of biocompost and biogas. Microbial fuel cells (Biodiesel and H₂ production).

Unit XI

Biosensor- Advantages of using microorganisms as biosensing elements, Immobilization of microorganisms, Electrochemical microbial biosensors, Optical microbial biosensor and other types.

BLOCK-4: GMO

Unit XII

Genetically Modified Microorganisms- Molecular Tools for Genetic Engineering of Microorganisms.

Unit XIII

Applications of GMM- Derived Products- Human Health, Agriculture and environment.

Unit XIV

Ethical issues raised by genetically modified microorganisms.

References

1. Lodish, H., Berk A., Kaiser, C.A., Krieger, M., Scott, M. P., Brtscher A., Ploegh, H., and Matsudaria, P. (2008). **Molecular Cell Biology** (6th Edition), W. H. Freeman, USA.
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5. Walsh, G. and Headson D.R. (1994). **Protein Biotechnology**, John Wiley and Sons, New York.
6. Borowitzka M, A. and Borowitzka, L.J. (1989). **Microalgae Biotechnology**, Cambridge University Press.



II YEAR – IV SEMESTER
COURSE CODE: 36443

BIOINFORMATICS & BIOSTATISTICS

Objective

1. To create awareness on usage of computer aided biology.
2. To learn about individual nucleotide and protein sequence analysis.
3. To understand the concepts of data collection.

Outcome

1. Better understanding of evolutionary relationship of various species.
2. Get more knowledge on structure of proteins and nucleotides.
3. Able to understand the role of biostatistics in research.

BLOCK 1: Introduction to Bioinformatics

Unit I

Biology in the Computer age- Computational approaches to Biological questions, Basics of computers- servers and workstations.

Unit II

Operating systems- UNIX, Linux, World Wide Web. Search engines, finding scientific articles- Pubmed- Public biological databases.

Unit III

Genomics- Sequence analysis- Sequencing genomes- sequence assembly- pairwise sequence comparison- genome of the web- annotating and analyzing genome sequences.

BLOCK 2: Database

Unit IV

Genbank-sequence queries against biological databases- BLAST and FASTA- multifunctional tools for sequence analysis.

Unit V

Multiple sequence alignments, Phylogenetic alignment- profiles and motifs.

Unit VI

Proteomics- Protein data Bank, Swiss prot- biochemical pathway databases, Predicting protein structure and function from sequence-Determination of structure- feature detection- secondary structure prediction- predicting 3D structure- protein modeling.

BLOCK 3: Introduction to Biostatistics

Unit VII

Biostatistics- definition, scope, applications in biology, terminology, sampling techniques- random and non-random methods.

Unit VIII

Measures of central tendencies - Mean, mode, median, standard errors and standard deviations.

Unit IX

Probability - concepts, terminology, kinds of probabilities, theorems of probability, normal, binomial and poisson distribution. Skewness and kurtosis.

Unit X

Chi Square test- characteristics, degrees of freedom, test of goodness of fit and null hypothesis.

BLOCK 4: Statistical Analysis

Unit XI

Analysis of variance (ANOVA)- Methods of ANOVA, one way and two way classifications, F-test, steps involved in ANOVA and its importance.

Unit XII

Correlation- Definition, methods of studying the correlation, scatter diagram, Karl Pearson's coefficient of correlation and rank correlation methods and types of correlations.

Unit XIII

Regression- Definition, types of regression analysis, regression equation, methods of studying regression, graphic and algebraic methods and importance of regression.

Unit XIV

Importance of statistical software in data analysis.

References

1. Ewans, W.J. and Gregory, G. (2005). **Statistical methods in Bioinformatics: An Introduction** (Statistics for Biology and Health) Springer.
2. Stanton, A and Clantz, S. (2005). **Primer of Biostatistics**, The McGraw Hill Inc., New York.
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**II YEAR – IV SEMESTER
COURSE CODE: 36444**

INDUSTRIAL MICROBIOLOGY & MICROBIAL BIOTECHNOLOGY

Suggested Laboratory Exercises:

INDUSTRIAL MICROBIOLOGY

1. Inoculum preparation for fermentation.
2. Screening of antibiotic producing microorganisms from soil.
3. Production of extracellular metabolites from actinomycetes.
4. Production of industrially important enzymes by Submerged fermentation (Any one enzyme).
5. Production of industrially important enzymes by Solid state fermentation (Any one enzyme).
6. Assay of extracellular enzymes produced by bacteria : a) Amylase, b) Protease and c) Lipase.
7. Purification of enzymes by Filtration method / Chemical method by ammonium sulphate.
8. Wine production.
9. Microbial Production of citric acid by using *Aspergillus niger*.
10. Separation of biomass – Wet and Dry mass.
11. Immobilization of cells and enzymes.

MICROBIAL BIOTECHNOLOGY

12. Isolation of dye degrading microorganism.
13. Antibiotic sensitivity test - a) Kirby Bauer's method and b) MIC determination by filter paper assay and broth dilution assay.
14. Separation of proteins - a) Paper chromatography, b) Column chromatography.

References

1. Dharmalingam, K. (1986). **Experiments with M13**, Macmilan India Ltd, Chennai.
2. Hames BD and Rickwood, D. (1990). **GEL Electrophoresis-a practical approach**, Oxford University press, New york.
3. Lorian, V. (1991). **Antibiotics in Laboratory Medicine**, Williams and Wilkins.
4. Willett, J.E. (1991). **Gas Chromatography**, John Wiley and Sons.
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6. Harwod, A.J, (1994). **Protocols for gene analysis**. Humana press.
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8. Surzyeki, S. (2000). **Basic Techniques in Molecular biology**, Springer.
9. Sambrook, J, and Russell, D.W. (2001). **Molecular cloning - A Laboratory manual** (3rd edition, vols-1,2,3) .Cold spring Harbor Laboratory. Cold Spring Harbor Laboratory press, New York.



M.A- (Home Science-Nutrition and Dietetics)

Sl. No.	Course Code	TITLE OF THE COURSE	CIA Max.	ESE Max.	TOT Max.	C
FIRST YEAR						
I Semester						
1	36511	HUMAN PHYSIOLOGY	25	75	100	4
2	36512	NUTRITION AND HEALTH	25	75	100	4
3	36513	ADVANCED FOOD SCIENCE	25	75	100	4
4	36514	Lab. I: HUMAN PHYSIOLOGY, NUTRITION AND HEALTH & ADVANCED FOOD SCIENCE	25	75	100	4
		Total	100	300	400	16
II Semester						
5	36521	NUTRITIONAL BIOCHEMISTRY	25	75	100	4
6	36522	FUNCTIONAL FOODS AND NUTRACEUTICALS	25	75	100	4
7	36523	FOOD SERVICE MANAGEMENT	25	75	100	4
8	36524	Lab. II: NUTRITIONAL BIOCHEMISTRY, FUNCTIONAL FOODS AND NUTRACEUTICALS & FOOD SERVICE MANAGEMENT	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III Semester						
9	36531	CLINICAL AND THERAPEUTIC NUTRITION	25	75	100	4
10	36532	DIETETICS IN LIFE STYLE DISEASES	25	75	100	4
11	36533	COMMUNITY NUTRITION	25	75	100	4
12	36534	Lab. III: CLINICAL AND THERAPEUTIC NUTRITION, DIETETICS IN LIFE STYLE DISEASES, COMMUNITY NUTRITION	25	75	100	4
		Total	100	300	400	16
IV Semester						
13	36541	PAEDIATRIC NUTRITION	25	75	100	4
14	36542	FOOD MICROBIOLOGY AND SANITATION	25	75	100	4
15	36543	FOOD BIOTECHNOLOGY & BIOSTATISTICS	25	75	100	4
16	36544	Lab. IV: PAEDIATRIC NUTRITION, FOOD MICROBIOLOGY AND SANITATION & FOOD BIOTECHNOLOGY & BIOSTATISTICS	25	75	100	4
		Total	100	300	400	16
		Grand Total	400	1200	1600	64

36511-HUMAN PHYSIOLOGY	
Maximum marks: 100	Credits: 4

Objectives:

To enable the students

- To understand the basic concepts of prokaryotic and eukaryotic cell.
- To understand the basics of Human Physiology.
- To enable the students to understand the metabolic changes under various conditions.

BLOCK – I: CELL, CELL ORGANELLES, TISSUES AND MUSCLES**Unit I**

Cell - Structure and organization of prokaryotic and eukaryotic cells. Cell and nuclear membrane, cell wall and cell envelope. Physiology of cytoplasm.

Unit II

Cell organelles - Structural organization and functions of intracellular organelles: nucleus, nucleolus, endoplasmic reticulum, golgi complex, mitochondria, chloroplast, lysosomes, peroxisomes and vacuoles.

Unit III

Tissues - Classification, structure and functions of epithelial, muscular, connective and nervous tissues.

Unit IV

Musculo skeletal system – structure and functions of bone, cartilage, muscle, joints, ligaments and tendons.

BLOCK – II: BLOOD, CARDIOVASCULAR, RESPIRATORY AND DIGESTIVE**SYSTEM UNIT V**

Blood - Introduction to hematology, functions of blood, plasma proteins, erythrocytes, Hb, important indices of RBC & WBC, Functions of blood groups, ESR, blood viscosity, blood coagulation, Erythroblastosis foetalis and blood transfusion.

UNIT VI

Cardiovascular system - Basic properties of the heart, cardiac output, blood pressure and factors affecting it and hypertension. Nutrition and metabolism of heart. Exercise and heart Function. Techniques to identify cardiovascular disorders –angioplasty and angiogram.

UNIT VII

Respiratory system - Anatomy and physiology of respiratory organs, mechanism of respiration, gaseous exchange in lungs and tissues. Resuscitation and its methods. Respiratory disorders: dyspnoea, asphyxia, hyperpnoea, orthopnoea,

UNIT VIII

Digestive system - Anatomy, composition & functions of salivary, gastric, intestinal & pancreatic secretions. Functions of bile salts, Mechanism of secretion of digestive juices and its regulation, movements of stomach, small intestine, villi, defecation. Important of liver in digestive system, anatomy and physiology.

BLOCK – III: EXCRETORY AND REPRODUCTIVE SYSTEM, SENSE

ORGANS UNIT IX

Excretory system - Mechanism of urine formation and the role of the kidneys in water and electrolyte balance. Renal function tests. Artificial kidney, dialysis and renal transplantation.

Unit X

Reproductive system - Male and female reproductive organs: structure and functions. Menstruation, menstrual cycle, puberty, menarche, menopause, fertilization, conception, implantation. Male and female contraception's- Etiology of male and female infertility.

Unit XI

Sense organs - Physiology of vision, hearing, taste, smell and cutaneous sensations.

BLOCK – IV: ENDOCRINE, EXOCRINE AND NERVOUS SYSTEM

Unit XII

Endocrine glands - pituitary, thyroid gland, parathyroid gland, pancreas, adrenal cortex and adrenal medulla. Mechanism of action of hormones. Hormonal imbalance syndromes, hypo or hyperactivity.

Unit XIII

Exocrine glands – Structure and functions of sweat, salivary, mammary, ceruminous, lacrimal, sebaceous, and mucous glands. Gland secretion syndromes.

UNIT XIV

Nervous system - General anatomy of nervous system, functions of the different parts, reflexes, autonomic nervous system. Common test in neurological disorders- EEG, EMG, MRI, NCV.

REFERENCES

1. Leslie P. Gartner, 2016. "Textbook of Histology" Elsevier; 4th edition.
2. John E. Hall, 2015. "Guyton and Hall Textbook of Medical Physiology" W.B. Saunders & Company 13th edition.
3. Tortora G.J and Grabowski S.R, 2000. "Principles of Anatomy and Physiology". John Wiley and Sons.Inc. 9th edition.
4. Chaudhari S. K, 2000. "Concise Medical Physiology"3rd Edition.
5. West J.B. 1996. "Physiological Basis of Medical Practice". B. I. Waverly Pvt. Ltd. 12th Edition.
6. Guyton.A.C, 1991. Textbook of medical physiology, 9th edition, Philadelphia, WB Saunders.
7. Chatterjee.C.C, 1987. Human Physiology (11th edition), Vol 1 & 2, Medical Allied Physiology.

OUTCOME:

This course provides the students a sound basis in human physiology to support further study in health nutrition & dietetics and medical sciences or related fields.

Objectives:

To enable the students

- To understand the role of nutrition in different conditions.
- To examine the techniques available for the assessment of nutritional status.
- To provide a complete understanding of the links between early nutrition and adult disease.
- To identify and overcome obstacles in the provision of healthy diets for specific age groups.
- To develop competency in planning diets to meet the nutritional requirements of different socio economic levels.

BLOCK – I: NUTRITION, DIET IN HEALTH AND**PREGNANCY UNIT I**

Nutrition and diet in health - concept of adequate nutrition and malnutrition. Difference between hunger, appetite and satiety. Different food groups – major nutrients present in each group, guide in menu planning.

UNIT II

Recommended dietary allowances - Basis for requirements. ICMR Recommended Dietary Allowances (RDA) for Indians, FDA Recommendations, Basal metabolic rate (BMR) and active metabolic rate (AMR). Balanced diets.

UNIT III

Nutrition in pregnancy - Physiological changes in pregnancy. Nutritional status and general health. Importance of preconceptual nutrition. Weight gain during pregnancy and the nature of weight gain. Factors affecting maternal nutritional status.

UNIT IV

Nutrition in pregnancy - requirements, storage of nutrients in normal pregnancy, complications of pregnancy and nutritional problems in young and too old expectant mothers – causes and complications. Avoiding pregnancy associated health risk through nutrition-gestational diabetes, iron deficiency anemia and hypertensive disorders.

BLOCK-II: VACCINATION, NUTRITION IN LACTATION, INFANCY AND PRESCHOOL**UNIT V**

Pregnancy and vaccination -Immunization schedule & tests during pregnancy - measles, mumps, rubella (MMR) vaccine- Tdap vaccine.

UNIT VI

Nutrition in lactation - Physiological adjustments during lactation, lactation in relation to growth and health of infants, efficiency of milk production, diet during lactation.

UNIT VII

Nutrition in infancy - Nutritional status of the infants, rate of growth as the indicator. Nutritional allowances for the infants, breast feeding Vs formula feeding, food square, weaning foods suitable for infants, feeding the premature infants and Low Birth Weight (LBW) infants, reasons for under 5 Mortality Rate (MR), interventions to prevent malnutrition.

UNIT VIII

Nutrition in preschool age - Growth and development of preschool children, food habits and nutrient intake of preschool children. Dietary allowances – supplementary foods, reasons for under 5 Mortality Rate. Interventions to prevent malnutrition among preschoolers.

BLOCK–III: NUTRITION IN SCHOOL AGE, ADOLESCENCE AND

ADULTS UNIT IX

Nutrition during school age - Physical development, nutritional status of school going children, food habits, nutritional requirements, nutrition and academic performance, interventions to prevent malnutrition.

UNIT X

Nutrition during adolescence - Changes of growth, assessment of growth – sexual maturity rating, physical, physiological and psychological changes in adolescents. Nutritional needs of the adolescents, changes needed to prevent malnutrition in adolescents.

UNIT XI

Nutrition for the adults - Nutritional requirements according to the mode of activity. Nutrition and health of women-general nutritional problems of women, anemia, osteoporosis, pre and post- menopausal syndrome, hormonal changes during menopause. Infertility – risk factors, prevention, methods of detection.

BLOCK–IV: NUTRITION IN OLD AGE, SPECIAL EVENTS AND NUTRITION MONITORING

UNIT XII

Nutrition in old age - Ageing process - physiological, metabolic, body composition changes. Nutritional & health status of elderly.

UNIT XIII

Nutrition in special events - Sports nutrition - quantity of fluids and food taken by an athlete. Space nutrition - food product created and processed for consumption by astronauts in outer space.

UNIT XIV

Nutrition monitoring and its current programmes - Nutrition Surveillance System, Integrated Child Development Services (ICDS) Programme, Nutrient Deficiency Control Programme, Supplementary Feeding Programme and Food Security Programme.

REFERENCES

1. L. Kathleen Mahan and Janice L. Raymond, 2016. Krause's Food & the Nutrition Care Process Saunders-Elsevier.
2. Park.K, 2015. Park's Textbook of Preventive and Social Medicine, 23rd ed. M/s Banarsida Bhanot, Jabalpur.
3. William's, 2009. Basic Nutrition and Diet Therapy. 13th Edition. Stacy Nix, Elsevier Mosby.
4. Tony Worsley, Basil S. Hetzel and Mark Lawrence, 2008. Public Health Nutrition: From

Principles to Practice. Allen and Unwin Special Priced Titles.

5. Mahan.L.K and Stump SE, 2001. Krause's Food, Nutrition and Diet Therapy, WB Saunders Company, 10th edition.
6. FAO/WHO, 1998. Preparation and use of food based dietary guidelines. Report of a joint FAO/WHO consultation: Nicosia, Cyprus. Nutrition Programme, WHO, Geneva.

OUTCOME:

This course enables the students to understand the social relevance of nutrition and its role in health.

Objectives:

To enable the students

- To understand the nutritive value of foods.
- To understand the principles and chemistry of foods.
- To examine how food quality, properties, and safety are affected and controlled by handling, processing and storage practices.

BLOCK-I: FOOD PREPARATION, PROPERTIES OF FOOD AND FOOD**QUALITY UNIT I**

Food in relation to health - Introduction to food science as a discipline and modern developments, different methods of cooking, functions of cooking food.

UNIT II

Functional properties of foods - Definition, structure and properties of food hydrocolloids. Hydrocolloids as gelling, emulsifying, thickening, stabilizing and coating agents. Important roles of proteins (denaturation and browning), carbohydrates (caramelization and crystallization) and fats (emulsification) in altering the functional properties of food.

UNIT III

Evaluation of food quality - Quality attributes of food – appearance factors, textural factors, and flavor factors sense of taste, texture and colour: sensory evaluation and objective evaluation. Types of sensory test. Procedures for determination and monitoring of shelf life.

BLOCK-II: CEREALS, MILLETS, PULSES, NUTS, VEGETABLES, FRUITS AND FLESH FOOD**UNIT IV**

Cereals & Millets - Nutritive value, parboiling, Cereal cookery – gluten- factors affecting gluten formation, Starch granules structure and characteristics – effect of moist and dry heat, nonstarch polysaccharides- fibres, cellulose, hemicellulose, pectic substances, gums and carboxy methyl cellulose (CMC). Nutritive value of breakfast cereals and fermented products.

UNIT V

Pulses, nuts and oilseeds - Nutritive value, processing, protein foods for infants and children, soy products, protein concentrates and isolates, textured vegetable proteins.

UNIT VI

Vegetables and fruits - Nutritional importance, pigments and acids, effect of cooking on pigments and nutrients. Post-harvest changes of fruits, browning reactions- enzymatic and non-enzymatic.

UNIT VII

Flesh foods - Composition, post-mortem changes in meat, changes produced during cooking, spoilage. Effect of heat on egg proteins, egg foams, factors influencing foaming and egg products.

BLOCK-III: MARINE FOODS, MILK PRODUCTS, FATS AND BEVERAGES

Unit VIII

Nutritive value of marine foods: Fish, shrimp and sea weeds.

Unit IX

Milk and milk products – Nutritive value of milk powders, ghee, khoa, butter, paneer, cheese and ice creams - Composition, physical and functional properties.

UNIT X

Fats and oils - role of fat in cookery, rancidity, changes of fat on heating, salad dressing.

UNIT XI

Beverages – Classification, manufacture and nutritional significance and energy value.

BLOCK-III: SUGAR, FOOD ADDITIVES AND FOOD

TECHNOLOGY UNIT XII

Sugar - Properties, sugar related products, crystallization, crystalline & non- crystalline candies, stages of sugar cookery, artificial sweeteners.

Unit XIII

Food additives - Definition and needs for food additives, types of food additives and food safety, unintentional additives.

UNIT XIV

Food technology - Genetically Modified (GM) foods, Production and nutritive value of GM foods.

REFERENCES

1. Judith L. Buttriss, Ailsa A. Welch, John M. Kearney, Susan A, 2017. Lanham-New. Public Health Nutrition, 2nd Edition, ISBN: 978-1-118-66097-3.
2. B. Srilakshmi, 2015. “Food Science” New Age International Private Limited; Sixth edition.
3. Frank Lee, 2012. “Basic Food Chemistry” Springer; Softcover reprint of the original 1st edition.
4. Sunetra Roday, 2012. “Food Science and Nutrition” Oxford Press; Second edition.
5. G. L. Tandon, G. S. Siddappa, Girdhari Lal, 2009. “Preservation of Fruits and Vegetables” by Bombay Popular Prakashan.
6. Manay.N.S & Shadaksharaswamy.M, 2002. Foods-Facts & Principles. New Age International Pvt.Ltd, New Delhi.
7. Potter, N. Hotchkiss, H.J, 1996. Food Science, 5th edition, CBS publishers and distributors, New Delhi.
8. Beckhan. C.G & Graves.H.J, 1979. Foundations of food preparations, Macmillan Publishing Co, New Delhi.

OUTCOME:

This course facilitates the students to understand the basic concepts in food science

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36514 - Lab. I: HUMAN PHYSIOLOGY, NUTRITION AND HEALTH & ADVANCED FOOD SCIENCE	
Maximum marks: 100	Credits: 4

Objectives:

To enable the students

- ✓ To assessment of nutritional status and nutritional requirements of humans.
- ✓ To planning and preparation of therapeutic diets for various diseases and health conditions.
- ✓ To introduce the students about the tools used in health management.

HUMAN PHYSIOLOGY

1. Estimation of Glucose from blood.
2. Analysis of blood Haemoglobin.
3. Determination of Cholesterol from blood.
4. Estimation of Vitamins, Minerals, Electrolytes from blood.
5. Blood cell counts, haematocrit, blood histology/ blood smears
6. Blood typing
7. Histology: cells and tissues
8. Diffusion and osmosis
9. Urine analysis - Creatinine, Total nitrogen and Urea
10. Pregnancy test

HEALTH AND NUTRITION

1. Preparation of low cost recipes for adolescents, pregnant and lactating mothers.
2. Evaluation of the ongoing public health nutrition programmes.

ADVANCED FOOD SCIENCE

1. Database management of anthropometric indices, biochemical indices, dietary recall, energy expenditure and intake.
2. Role of portable devices in diet and health management.

REFERENCE:

1. Judith L. Buttriss, Ailsa A. Welch, John M. Kearney, Susan A. Lanham, 2017. New. Public Health Nutrition, 2nd Edition, , ISBN: 978-1-118-66097-3.
2. Paul. S., 2014. Textbook of Bio-Nutrition, Curing diseases through diet, CBS publications, first edition.
3. Maurice E Shils, James A. Olson, Moshe Shike, 2012. "Modern Nutrition in health and disease" 11th edition, Vol I & II Lea & Febiger Philadelphia, A Waverly company.
4. Srilakshmi B., 2004. Dietetics, New Age International (P) Limited Publications.
5. Sue Rodwell Williams, Eleanor D. Schlenker, 2003. "Essentials of Nutrition and Diet Therapy" C.V. Melskey Co.
6. M. Swaminathan. 2001. "Principles of Nutrition and Dietetics", Bappeo 88, Mysore Road, Bangalore - 560 018.

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Objectives:

To enable students to:

- ✓ To learn the biochemical role of nutrients in foods and deficiency diseases.
- ✓ To understand the metabolism of nutrients in health and diseases.

BLOCK-I: CARBOHYDRATES AND PROTEINS**Unit I**

Carbohydrates - Classification, physical and chemical properties, sources, biological role.

Unit II

Carbohydrate metabolism - Glycolytic pathway, deficiency diseases, inborn errors of carbohydrate metabolism. Nutritional aspects of carbohydrate.

Unit III

Proteins - Classification, physical and chemical properties, sources, biological role and value of protein.

Unit IV

Protein metabolism – Protein synthesis, deficiency diseases and inborn errors of protein metabolism.

BLOCK-II: LIPIDS, VITAMINS AND MINERALS**Unit V**

Lipids - Classification, physical and chemical properties, sources, biological role.

Unit VI

Lipid metabolism – β -oxidation. nutritional aspects of lipids, lipid based metabolic diseases, In-born errors of lipid metabolism.

Unit VII

Vitamins - Classification, characteristics, role of vitamins in metabolism, deficiency diseases.

Unit VIII

Minerals - Types, absorption & role of minerals in metabolism, minerals deficiency diseases.

BLOCK-III: NUCLEIC ACIDS AND ENZYMES**Unit IX**

Nucleic acids - DNA & RNA, structure, function and metabolism, genetic disorders.

Unit X

Enzymes - Classification, nomenclature, mechanism of enzyme action, enzyme specificity, application of enzymes in clinical diagnosis.

Unit XI

Enzyme activity - Factors affecting enzyme activity, Co-enzymes and Co-factors.

BLOCK-IV: HORMONES, BUFFERS AND ELECTROLYTES

Unit XII

Hormones - Role of hormones. Interrelation between hormones and nutrients. Hormone deficiency diseases.

Unit XIII

Acid base balance - normal health, major sources of acid produced in the body, buffers, physiological role of different buffer systems.

Unit XIV

Fluid and electrolyte balance - Maintenance in normal health. Diseases of electrolytes imbalance. Role of nutrients in maintenance of fluid and electrolyte balance during disease condition.

REFERENCE:

1. Pooja Gupta. (2017) Food, Nutrition And Health, S Chand Publishing, India
2. Berg JM, Tymoczko JL and Stryer L. (2015) Biochemistry 8th ed. W.H. Freeman.
3. Murray RK, Granner DK, Mayes PA and Rodwell VW, (2015) Harper's Illustrated Biochemistry, 30th ed. McGraw-Hill (Asia).
4. Devlin Tm. (2010) Text Book of Biochemistry with clinical Correlations. 7th ed. John Wiley and sons.
5. Voet D and Voet JG. (2010) Biochemistry 4rd ed. John Wiley and Sons.
6. Nelson DL and Cox MM. (2005) Principles of Biochemistry, 4th ed. Freeman and Company.

OUTCOME:

This course provide the students a comprehensive overview about the principle, scope and applications in nutritional biochemistry

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Objectives:

To enable the students

- ✓ To gain knowledge about functional foods and nutraceuticals
- ✓ To understand about the health effects
- ✓ To know the application in Industry.

BLOCK-I: FUNCTIONAL FOODS, PROBIOTICS AND**PREBIOTICS UNIT I**

Definition, history, classification of functional foods: Probiotics, prebiotics and synbiotics; Nutrient vs. Non-nutrient.

UNIT II

Probiotics - Taxonomy and important features of probiotic micro- organisms. Health effects of probiotics including mechanism of action.

UNIT III

Probiotic micro- organisms in fermented milk products and non-milk products. Quality assurance of probiotics and safety.

UNIT IV

Prebiotics - chemistry, sources and bioavailability, effect of processing, effects on human health and potential applications in risk reduction of diseases, perspective for food applications for the following:

Non-digestible carbohydrates/oligosaccharides: Dietary fibre, Resistant starch, Gums.

BLOCK-II: PLANT METABOLITES AND NON- NUTRIENT EFFECT OF SPECIFIC NUTRIENTS**UNIT V**

Alkaloids, Glucosinolates, Terpenoides and Phenolics- Chemistry, classes, sources, bioavailability and effects on human health

UNIT VI

Antinutrients present in food: phytate, saponin, haemagglutinins, protease, amylase and lipase inhibitors. Spices and Condiments- nutritive value and uses in cooking.

UNIT VII

Non- nutrient effect of specific nutrients: Proteins, Peptides and nucleotides, Conjugated linoleic acid and n-3 fatty acids, Vitamins and Minerals.

BLOCK-III: PROPERTIES, STRUCTURE AND FUNCTIONS OF**NUTRACEUTICALS UNIT VIII**

Introduction to nutraceuticals as science - Historical perspective, classification, scope & future prospects.

UNIT IX

Applied aspects of the nutraceutical science: Sources of Nutraceuticals. Relation of Nutraceutical Science with other Sciences: Medicine, Human physiology, genetics, food technology, chemistry and nutrition.

UNIT X

Properties, structure and functions of various nutraceuticals - Glucosamine, Octacosanol, Lycopene, Carnitine, Melatonin and Ornithine alpha ketoglutarate. Use of proanthocyanidins, grape products, flaxseed oil as Nutraceuticals.

BLOCK-IV: NUTRACEUTICAL SUPPLEMENTS AND REMEDIES UNIT XI

Nutraceutical rich supplements - Bee pollen, Caffeine, Green tea, grape tea, wheat grass, Lecithin, Mushroom extract, Chlorophyll, Kelp and Spirulina, *Garcinia cambogia*, *Aloe vera* and Blue Tea⁴.

UNIT XII

Food as remedies: Nutraceuticals bridging the gap between food and drug, Nutraceuticals in treatment for cognitive disorders. Medicinal plant derived nutraceuticals: Anti aging, anti-inflammatory compounds.

UNIT XIII

Nutraceutical remedies for Arthritis, Bronchitis, circulatory problems, hypoglycemia.

UNIT XIV

Nutraceutical remedies for Nephrological disorders, Liver disorders, Osteoporosis, Psoriasis and Ulcers.

REFERENCES

1. Dhiraj A. Vattam, Vatsala Maitin, 2016. Functional Foods, Nutraceuticals and Natural Products: Concepts and Applications, DEStech Publications, Inc.
2. Joyce I. Boye, 2015. Nutraceutical and Functional Food Processing Technology (IFST Advances in Food Science), Wiley-Blackwell.
3. Cho S. S. and Dreher, M.L, 2001. Handbook Dietary Fibre, Marcel Dekker Inc., New York.
4. Wildman, R.E.C, 2000. Handbook of Nutraceuticals and Functional Foods, CRC Press, Boca Raton.
5. Yurawecz, M.P., M.M. Mossoba, J.K.G. Kramer, M.W. Pariza and G.J. Nelson, 1999. Advances in Conjugated Linoleic Acid Research, Vol. 1. AOCS Press, Champaign.
6. Heller IR, et al. 1999. Report by CSPI. Functional foods: public health boon or 21st century quackery? Washington, DC: Center for Science in the Public Interest.
7. Thomas PL, Earl R, 1994. Opportunities in nutrition and food sciences. Washington, DC: National Academy Press; p 109.

OUTCOME:

This course empowers the students with current scenario in functional foods and neutraceuticals.

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36523 FOOD SERVICE MANAGEMENT	
Maximum marks: 100	Credits: 4

Objectives:

To enable the students

- ✓ To understand the objectives of different types of food service Institutions.
- ✓ To apply knowledge in space allocation of food plants
- ✓ To gain knowledge in menu planning preparation of recipes in large scale and serving and in food costing.

BLOCK-I: FOOD SERVICE INDUSTRY, INFRASTRUCTURE AND MATERIALS MANAGEMENT**UNIT I**

Food service industry: Scope of food industry and segmentation.

UNIT II

Organization & administration of food service industry: types, organization structure and management.

UNIT III

Physical facilities and layout – Size and type of kitchen, design of kitchen, ventilation, lighting, flooring, carpets, wall covering and sample layout of kitchen. Storage area and equipment required.

UNIT IV

Food materials management - Purchasing of food materials, receiving & storing – Importance of receiving raw materials.

BLOCK-II: FOOD SERVICE MANAGEMENT IN**HOSPITALS UNIT V**

Hospital food production – Menu planning for patients and process of food production. Different methods of holding foods for service.

UNIT VI

Hospital food service management - Principles and techniques of effective management, leadership and managerial abilities.

UNIT VII

Tools of food management - Organizational chart of the food service team in hospital.

UNIT VIII

Food service equipment - Classification, selection, purchasing, care and maintenance.

BLOCK-III: PREPARATION, SERVICE AND SANITATION OF**FOOD UNIT IX**

Quantity food preparation - Types of menu, menu planning, purchasing, storage, production management, conventional and non-conventional sources of energy, Standardization and portion control.

UNIT X

Styles of service - Self-service, tray service, waiter-waitress service, vending and mobile food service system.

UNIT XI

Sanitation and hygiene - Environmental hygiene & sanitation, safe food handling practices, personal hygiene.

BLOCK-IV: HUMAN RESOURCE MANAGEMENT, MARKETING AND DIETARY ACCOUNTING

UNIT XII

Human resource management - Recruitment & selection, induction, training, performance appraisal, leadership, communication, employee benefits, laws governing food service establishment.

UNIT XIII

Marketing - Definition, marketing as a managerial function, marketing mix and promotion in food service.

Unit XIV

Dietary accounting - Definition and principles. Journal and ledger. Book of account – cash book, purchase book, sales book, purchase returns & sales returns book.

REFERENCES

1. Karen E. Drummond, Lisa M. Brefere, 2017; Nutrition for Food service and Culinary Professionals, 9th Edition (EHEP003624).
2. Ruby Parker Puckett, 2012. Food service Manual for Health Care Institutions, John Wiley & Sons.
3. Sethi M and Mahan S., 2006. Catering Management an integrated approach, 2nd edition, John wiley & Sons, New York.
4. Tersel MC and Harger, 2005. Profession food preparation, John wiley & Sons, New York.
5. Joan C Boson, Lennox M. 2004. Hotel, hostel & hospital housekeeping, 5th edition, Book power publishers, New York.
6. Marian C Spears; 1995. Food Service Organisation; III Edition, Prentice Hall Inc., USA.
7. West and Woods, 1994. Introduction to Food Service, Macmillan Publishing Company, New York, 7 th edition.
8. Lendal. H. Kotschever, Richard Donnelly, 1993 “Quantity Food Purchasing, Mac Millan Publishing Company, New York, IV Edition.

OUTCOME:

This course imparts the students about the significance of food service management, sanitation of food and dietary accounting.

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36524 - Lab. II: NUTRITIONAL BIOCHEMISTRY, FUNCTIONAL FOODS AND NUTRACEUTICALS & FOOD SERVICE MANAGEMENT	
Maximum marks: 100	Credits: 4

Objectives:

To enable the students

- ✓ To gain knowledge in biochemical analysis of food samples.
- ✓ To get practical experience in the laboratory and develop the skills related to functional foods and nutraceuticals.
- ✓ To provide overview about the strategies in food service management.

NUTRITIONAL BIOCHEMISTRY

1. Determination of Moisture content in Food sample.
2. Determination of Carbohydrates, Proteins and fats in Food sample.
3. Determination of Gluten content in wheat.
4. Estimation of Acidity in wheat flour.
5. Estimation of Fiber, Phosphorous and Iron content in any one food.
6. Determination of Calcium content in milk.

FUNCTIONAL FOODS AND NUTRACEUTICALS

1. Manufacturing aspects of selected nutraceuticals (Demonstration)
 - a. lycopene,
 - b. isoflavonoids
 - c. prebiotics
 - d. probiotics
 - e. glucosamine
 - f. phytosterols
2. Spirulina cultivation (Industrial visit)

FOOD SERVICE MANAGEMENT

1. Causes and prevention of food-borne illnesses in food service operations.
2. The levels of management and the various production and service positions in a food operation (Field visits)

REFERENCES

1. Pooja Gupta. (2017) Food, Nutrition And Health, S Chand Publishing, India
2. Paul. S., 2014. Textbook of Bio-Nutrition, Curing diseases through diet, CBS publications, first edition.
3. Maurice E Shils, James A, 2012. Olson, Moshe Shike “Modern Nutrition in health and disease” 11th edition, Vol I & II Lea & Febiger Philadelphia, A Waverly company.
4. Srilakshmi B., 2004. Dietetics, New Age International (P) limited Publications.
5. Sue Rodwell Williams, Eleanor D. Schlenker, 2003. “Essentials of Nutrition and Diet Therapy” C.V. Melskey Co.
6. M. Swaminathan, 2001. “Principles of Nutrition and Dietetics”, Bappeo 88, Mysore Road, Bangalore - 560 018.
7. Messina M, Messina V, 1996. Nutritional Implications of Dietary Phytochemicals. In: Dietary Phytochemicals in Cancer Prevention and Treatment. Plenum Press. New York.

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Objectives:

To enable the students to know the

- ✓ Effect and clinical values of various diseases
- ✓ Nutritional status and dietary requirements.

BLOCK-I: ROLE OF DIETITIAN, NUTRITION PSYCHOPATHOLOGY AND HOSPITAL DIETS**UNIT I**

Role of dietitian in the hospital and community- Education and personal qualifications, professional ethics and obligations. Educating the patient, diet clinics and follow up.

UNIT II

Psychology of feeding the patient, problems of feeding children, assessment of patient's needs.

UNIT III

Routine hospital diets -Regular diet, light diet, soft diet, full liquid diet, clear liquid diet and tube feeding.

UNIT IV

Enteral and parental feeding in hospitals –composition, monitoring and complications. Transitional feeding.

BLOCK-II: DIET IN FEBRILE CONDITIONS AND GASTROINTESTINAL DISORDERS UNIT V

Modifications of diet in febrile conditions -Acute, chronic and recurrent fevers, typhoid, rheumatic fever, tuberculosis, malaria, H1N1, dengue fever and chikungunya.

UNIT VI

Gastrointestinal disorders - Esophagitis, cancer of oral cavity, ulcer, indigestion, gastritis, carcinoma of the stomach, gastric surgery and dumping syndrome.

UNIT VII

Gastrointestinal Disorders - Diarrhoea, constipation, flatulence, celiac disease, tropical sprue, steatorrhea.

UNIT VIII

Irritable bowel disease (IBD) – crohn's disease, ulcerative colitis, Irritable bowel syndrome (IBS), diverticulitis, colitis and colon cancer.

BLOCK-III: DIET IN LIVER, GALL BLADDER, PANCREAS, METABOLIC AND RENAL DISORDERS**UNIT IX**

Liver, gall bladder and pancreatic disorders - Ecological factors: Dietary regimen in cirrhosis, hepatitis, hepatic coma, cholecystitis, cholelithiasis and pancreatitis

UNIT X

Metabolic disorders - Hypothyroidism, hyperthyroidism, gout, phenylketonuria and lactose intolerance

UNIT XI

Renal disorders - Contributory factors and dietary modification- acute and chronic glomerulonephritis, nephrosis, nephrosclerosis and nephrolithiasis.

BLOCK-IV: DIET IN FOOD ALLERGY, NEUROLOGICAL DISORDERS AND METABOLIC STRESS

UNIT XII

Food allergy - Definition, types, tests, dietary management and prevention.

UNIT XIII

Diet during neurological disorders - Alzheimer's disease, Parkinson's disease and epilepsy.

UNIT XIV

Diet during metabolic stress - Burns, sepsis and trauma. Surgical conditions- Cardiovascular complications, stroke and surgery, respiratory failure, hepatic failure, multi organ failure, Gastrointestinal tract (surgery and complications) and neurosurgery.

REFERENCES

1. Ellen Davis, 2017. Fight Cancer with a Ketogenic Diet: Using a Low-Carb, Fat-Burning Diet as Metabolic Therapy, 3rd edition, Ellen Davis.
2. Sylvia Escott-Stump, 2015. Nutrition and Diagnosis-Related Care. 8th edition, Wolters Kluwer.
3. Mahan.L.K and Stump SE, 2001. Krause's Food, Nutrition and Diet Therapy, WB Saunders Company, 10th edition.
4. Antia FP, Clinical Dietetics and Nutrition, 1997.Oxford University Press, New Delhi, 4th edition.
5. Garrow.JS & James W.P.T, 1993.Human Nutrition and Dieteics, Church Hill Living Stone.
6. Robinson, 1990. Normal and Therapeutic Nutrition, Oxford & LBM Publishing, Calcutta, Bombay, 17th edition.
7. Davidson, Pasmore P and Break LP, 1986. Human Nutrition and Dietetics, English language book society, Livingstone.
8. Karran, S. J. and K. G. M. M. Alberti, 1980. Practical Nutritional Support, John Wiley and Sons. Inc. New. York.

OUTCOME:

This course offers the students about the significance of diet in various health conditions.

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36532 DIETETICS IN LIFE STYLE DISEASES	
Maximum marks: 100	Credit: 4

Objectives:

To enable the students

- ✓ To gain knowledge about the principles of diet therapy and different therapeutic diets
- ✓ To develop aptitude for taking up dietetics as a profession.

BLOCK-I: DIETETICS IN STRESS AND WEIGHT**MANAGEMENT UNIT I**

Stress – definition, types, psychosomatic disorders due to stress and functional adjustment.

UNIT II

Biological effects of stress on various systems-brain, cardiovascular system, respiratory system, non- vital organs and immune system.

UNIT III

Stress enhancing food, antistress foods and nutrients. Dietary guidelines for the management of stress.

UNIT IV

Nutrition for weight management -components of body weight, adipose tissue and regulation of body weight. Obesity-assessment, types, causes and complications.

BLOCK-II: DIETETICS IN WEIGHT REDUCTION AND**DIABETES UNIT V**

Weight reduction techniques-dietary management, surgical management, lifestyle modification, Underweight-causes, complications and dietary management.

UNIT VI

Diabetes mellitus - Classification, symptoms, diagnosis, causes and complications. Management of diabetes-dietary management, artificial sweeteners, diet and insulin and lifestyle management.

UNIT VII

Diabetes Insipidus & Gestational diabetes – causes, complications, dietary and life style management.

BLOCK-III: DIETETICS IN CARDIOVASCULAR**DISEASES UNIT VIII**

Cardiovascular diseases - Risk factors, Blood lipids-Classification, assessment, dyslipidemia and hypercholesterolemia, Nutritional Risk Factors.

UNIT IX

Atherosclerosis - disease progression, causes, symptoms and clinical findings. Management-dietary and lifestyle.

UNIT X

Dietary management in angina pectoris, myocardial infarction and cardiac failure. Hypertension classification, causes, complications and dietary management.

BLOCK-IV: DIETETICS IN CANCER, DISEASES OF NERVOUS SYSTEM AND MUSCULO SKELETAL SYSTEM

UNIT XI

Cancer - Classification, development of cancer, risk factors-environmental, hereditary & nutritional.

UNIT XII

Nutritional effects of cancer – cachexia, energy metabolism, substrate metabolism and abnormalities in metabolism.

UNIT XIII

Cancer therapy-chemotherapy, radiation therapy, surgery, Immuno therapy and bone marrow transplantation. Nutritional problems of cancer therapy-dietary management. Role of food in the prevention of cancer.

UNIT XIV

Nutritional management in diseases of nervous system, and musculo skeletal system - Dysphagia, Epilepsy, Hyperkinetic Behaviour Syndrome, Etiology, dietary treatment in above conditions.

REFERENCES

1. Judith L. Buttriss, Ailsa A. Welch, John M. Kearney, Susan A. Lanham. 2017. -New. Public Health Nutrition, 2nd Edition, ISBN: 978-1-118-66097-3.
2. Louise Goff, Pamela Dyson. 2015. Advanced Nutrition and Dietetics in Diabetes. Wiley Blackwell.
3. Srilakshmi, B. 2006. Dietetics, New Age International (P) Ltd, Chennai.
4. Mohan, L.K. and Shump, S.E. 2001. Krause's Food Nutrition & Diet therapy, W.B.Sauders Company, XII edition.
5. Shills,E.M., Olson,S.J. and Shiks,M.C. 1994. Modern Nutrition in health and disease, Lea and Febringer, Philadelphia, 8th edition.

OUTCOME:

At the end of this course, the students can interpret the role of dietetics and diet therapy.

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Objectives:

To enable the students

- ✓ To gain insight in to the national nutritional problems and their implications
- ✓ To understand the international contribution towards nutritional improvements in India.
- ✓ To develop skills in organizing and evaluating nutrition projects in the community.

BLOCK-I: ASSESSMENT OF NUTRITIONAL STATUS AND MALNUTRITION UNIT I

Assessment of nutritional status - food and nutritional problems in the community, nutritional status of an individual and community.

UNIT II

Direct and indirect methods of nutritional assessment: clinical examination, nutritional anthropometry, biochemical methods, dietary survey.

UNIT III

Protein–energy malnutrition (PEM) - Aetiology, prevalence, symptoms and preventive measures.

UNIT IV

Ecology of malnutrition, nutrition and infection, Nutritional disorders: anaemia, vitamin A deficiency, iodine deficiency disorder.

BLOCK-II: MALNUTRITION IN INDIA AND NUTRITION INTERVENTION PROGRAMMES**UNIT V**

Prevalence of malnutrition in India: Common nutritional problems-prevalence, morbidity and mortality rate.

UNIT VI

Strategies to overcome malnutrition in India - Need for an integrated approach to solve the problems of malnutrition.

UNIT VII

Nutrition intervention programmes. Agriculture planning, role of food technology, Environmental sanitation and Health.

UNIT VIII

Objectives and operation of nutrition intervention programmes, and other programmes organized by governmental and non-governmental agencies for the vulnerable sections of the population.

BLOCK-III: ORGANIZATIONS CONCERNED WITH MALNUTRITION AND NUTRITION EDUCATION**UNIT IX**

National organizations concerned with food and nutrition- ICMR, ICARM, CHEB, CSWB

and SSWB.

UNIT X

International organizations concerned with food and nutrition, FAO, WHO, UNICEF, CARE, AFPRO, CWS and World Bank.

UNIT XI

Nutrition education - nature and importance to the community, training workers in nutrition education and extension work-when to teach, whom to teach and who is to teach.

BLOCK-IV: NUTRITION EDUCATION PROGRAMMES, FOOD PRODUCTION AND FOOD SPOILAGE

UNIT XII

Principles of planning, executing and evaluating nutrition education programmes, problems of nutrition education programmes.

UNIT XIII

Food production -Objectives in agriculture planning in relation to nutrition. Green Revolution, Blue Revolution, White Revolution and Yellow Revolution.

UNIT XIV

A brief review of losses of foods in the post-harvest period and agents causing food spoilage.

REFERENCES

1. Park.K, 2017. "Park's text book of preventive and social medicine", 24th edition, M/S, Banarsidas Bhanot publishers, Jabalpur.
2. Bamji, MS, 2017. "Textbook of human Nutrition", Oxford and IBH Publishing Co, New Delhi.
3. A. K. Nigam, 2015. Statistical Aspects of Community Health and Nutrition. Woodhead Publishing India in Food Science and Nutrition.
4. Michael J. Gibney, Hester H. Vorster, Frans J. Kok, 2002. "Introduction to Human Nutrition (The Nutrition Society Textbook)" Wiley-Blackwell.
5. Jeliffee.D.B, 1996. "Assessment of Nutritional Status of the community", World Health Organisation, Geneva.
6. Swaminathan.M, 1986. "Principles of Nutrition and Dietetics", Bangalore publishing company Ltd, Bangalore

OUTCOME:

At the end of this course, the students will acquire knowledge about the basic principles and practical applications of public health and nutrition.

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36534 - Lab. III: CLINICAL AND THERAPEUTIC NUTRITION, DIETETICS IN LIFE STYLE DISEASES, COMMUNITY NUTRITION	
Maximum marks: 100	Credit: 4

Objectives:

To enable the students

- ✓ To obtain knowledge on different therapeutic diets and their preparation

CLINICAL AND THERAPEUTIC NUTRITION

1. Preparation of hospital diets - routine hospital diets, regular diet, soft diet, full fluid diet and tube feeding blends.
2. Diet in febrile conditions - Acute & chronic fevers – typhoid, tuberculosis.
3. Diet in - Peptic ulcer, gastritis, diarrhea
4. Diet in constipation, malabsorption syndrome.
5. Diet in Cirrhosis, hepatitis, cholelithiasis and pancreatitis.
6. Diet in hypothyroidism, hyperthyroidism, gout, phenyl ketonuria, Lactose intolerance.
7. Diet in Atherosclerosis, hypercholesterolemia, hypertension, myocardial infarction.
8. Diet in cancer.

DIETETICS IN LIFE STYLE DISEASES,

1. Diet in Diabetes mellitus and Gestational Diabetes.
2. Diet in obesity and underweight
3. Diet in Glomerulonephritis, nephrosis, nephrolithiasis & dialysis.

COMMUNITY NUTRITION

1. Diet in Anaemia, protein calorie malnutrition,
2. Diet in vitamin A, D, E, K, C and B deficiency.

REFERENCES

1. Ellen Davis, 2017. Fight Cancer with a Ketogenic Diet: Using a Low-Carb, Fat-Burning Diet as Metabolic Therapy, 3rd edition, Ellen Davis.
2. Sylvia Escott-Stump, 2015. Nutrition and Diagnosis-Related Care, Lippincott Williams and Wilkins; 8th Edition.
3. A. Catharine Ross, Benjamin Caballero, Thomas R. Ziegler M.D, 2012. Modern Nutrition in Health and Disease (Modern Nutrition in Health & Disease (Shils)) 11th Edition.
4. Mohan, L.K. and Shump, S.E, 2001. Krause's Food Nutrition & Diet therapy, W.B. Saunders Company, 12th edition.
5. Antia FP, Clinical Dietetics and Nutrition, 1997. Oxford University Press, New Delhi, 4th edition.
6. Shills, E.M., Olson, S.J. and Shiks, M.C, 1994. Modern Nutrition in health and disease, Lea and Febringer, Philadelphia, 8th edition.
7. Garrow.JS & James W.P.T, 1993. Human Nutrition and Dieteics, Church Hill Living Stone.
8. Karran, S. J. and K. G. M. M. Alberti, 1980. Practical Nutritional Support, John Wiley and Sons. Inc. New York.

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36541- PAEDIATRIC NUTRITION	
Maximum marks: 100	Credit: 4

Objectives:

To enable the students

- ✓ To realize the importance of nutritional care and nourishment of children.
- ✓ To understand the nutritional requirements of children and the effects of paediatric diseases

BLOCK-I: NUTRITION IN INFANCY AND IMMUNIZATION**SCHEDULES UNIT I**

Infancy - Physiological development, assessment of nutritional status.

UNIT II

Anthropometric measurements, biochemical parameters, clinical & dietary data of infants.

UNIT III

Nutritional and food requirements for infants.

UNIT IV

Immunization schedule during pregnancy, infancy and childhood.

BLOCK-II: NUTRITIONAL MANAGEMENT OF INFANTS AND NEWBORN**SICKNESS UNIT V**

Nutritional management of premature baby, low birth weight babies and children with developmental disabilities.

UNIT VI

Infant lactation- Characteristics, causes and complications, feeding methods, growth and nutritional assessment of infant's lactation.

UNIT VII

Identification of newborn sickness-Detection of abnormal signs- cyanosis, jaundice, respiratory distress.

UNIT VIII

Bleeding, seizures, refusal and feed, abdominal distention, failure to pass meconium and urine of sick newborn.

BLOCK-III: CLINICAL NUTRITION IN**INFANTS UNIT IX**

Nutritional management in malnutrition -Protein-energy malnutrition (PEM), anaemia, scurvy, rickets, vitamin A deficiency, obesity of Childhood.

UNIT X

Underweight and underweight nutrition- short term and long term consequences in infants.

UNIT XI

Nutritional management of Diarrhoea, typhoid, TB and hepatitis of infants.

BLOCK-IV: NUTRITIONAL MANAGEMENT FOR CHILDREN WITH SPECIAL CONDITIONS

UNIT XII

Lactose intolerance, celiac disease, inflammatory bowel disease, constipation and fat absorption test diet of infants. (Calculation of fluids & electrolytes-both deficit and maintenance and management of calorie intake).

UNIT XIII

Nutritional management for children with special conditions - Autism and ADH (Attention Deficit Hyperactivity disorder), epilepsy and AIDS.

UNIT XIV

Measuring, recording and plotting growth of infants.

REFERENCES

1. Pooja Gupta, 2017. Food, Nutrition And Health, S Chand Publishing, India
2. Sibal Anupam, 2015. Textbook of Pediatric Gastroenterology, Hepatology And Nutrition, Jaypee Brothers Medical Publishers; first edition.
3. A. Catharine Ross, Benjamin Caballero, Thomas R. Ziegler M.D. 2012. Modern Nutrition in Health and Disease (Modern Nutrition in Health & Disease (Shils)) Eleventh Edition.
4. Nutrition in pediatrics: Basic Sciences & clinical Applicatios, W. Allan Walker, John B Watkins & Christopher Duggan, 2003. BC Decker Inc, Hamilton, Ontario.
5. Mahan, L.K. and Escott-Stump, S. 2000. Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd.
6. Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. 1999. Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins.
7. Fauci, S.A. et al. 1998. Harrison's Principles of Internal Medicine, 14th Edition, McGraw Hill.
8. Escott-Stump, S. 1998. Nutrition and Diagnosis Related Care, 4th Edition, Williams and Wilkins.
9. Walker, W.A. and Watkins, J.B. 1985. Nutrition in Pediatrics, Boston, Little, Brown & Co.

OUTCOME:

At the end of this course, the students will be able to know about the diet and nutrition of infants and children.

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Objectives:

To enable the students

- ✓ To understand the common micro-organisms associated with food borne illness
- ✓ To study about the microorganisms present in different food products.
- ✓ To study about the food packaging and labeling methods.

BLOCK-I: FUNDAMENTALS OF MICROBIOLOGY (YEAST, MOULDS AND VIRUSES) UNIT I

Fundamentals of Microbiology – Introduction, development of microbiology. Bacteria-morphology and cultural characteristics and its importance.

UNIT II

Yeast- Morphology, culture, physiology, classification and industrial importance of yeast .

UNIT III

Moulds-morphology, physiology and multiplication, significance of moulds and common household moulds in relation to food science.

UNIT IV

Viruses and bacteriophages - discovery, morphology, reproduction and its importance.

BLOCK-II: CONTAMINATION, SPOILAGE, PRESERVATION AND MICROBES OF FRUITS, VEGETABLES AND CEREALS**UNIT V**

Contamination of foods from external sources, General principles underlying spoilage - chemical changes by microorganisms.

UNIT VI

General principles of food preservation- Asepsis, Removal, Anaerobic conditions, High temperature, Low temperature, Drying, Food additives and Radiation

UNIT VII

Microbiology of fruits and vegetables - contamination, spoilage, preservation, and control of microorganisms.

UNIT VIII

Microbiology of cereals and cereal products - contamination, spoilage, preservation, and control of microorganisms.

BLOCK-III: MICROBES IN FLESHY FOODS, CANNED FOODS AND FOOD BORNE DISEASES**UNIT IX**

Microbiology of fleshy foods, poultry and fish - Contamination, Spoilage , Preservation and control

UNIT X

Spoilage of Canned foods- causes of spoilage, appearance of the unopened container,

grouping of canned foods on the basis of acidity, types of biological spoilage of canned foods.

UNIT XI

Food borne diseases –Food borne illness (bacteria), Food borne poisoning, infection and intoxication (non bacterial)

BLOCK-IV: FOOD SAFETY, PACKING AND FOOD STANDARDS UNIT XII

Food Sanitation and safety – Personal hygiene-care of hands, sanitation, equipment plant, plant constructions, personal facilities, water supplies and sewage disposal.

UNIT XIII

Food packaging – Packaging methods. Moisture sorption properties of foods and selection of packaging materials. Interactions between packaging and food toxicity hazards. Bar coding - Nutrition labeling and nutrition claims, coding of food products. Packaging laws and regulations

UNIT XIV

Food laws and standards –Bureau of Indian standards - PFA, FPO, MMPO, AGMARK, CCFS, CFL, BIS & FSSAI - Consumer protection act, 1986. International standards- Codex alimentarius, ISO, WHO, FAO, WTO and HACCP.

REFERENCES

1. William C. Frazier, Dennis C. Westhoff, N.M. Vanitha, 2017. Food Microbiology, McGraw Hill Education; Fifth edition.
2. Mahendra Raj, Pal Mahendra, 2015. Sanitation in Food Establishments. LAP Lambert Academic Publishing.
3. Srilakshmi B.2008. Food Science. 4th Edition. New Age International Private Limited, New Delhi.
4. Shakuntala M.N., Shadaksharaswamy M. 2002. Foods –Facts and Principles. New Age International Publishers, New Delhi.
5. Roday,S 1999. Hygiene and Sanitation in Food Industry. Tata Mc Graw Hill Publishing Company Ltd., New Delhi.
6. Frazier,W.C & Westhoff, D.C. Food Microbiology. Tata MC Graw, 1997. Hill Publishing Company Ltd., New Delhi, 5th Edition.
7. Potter,N.Hotchkiss, H.J. 1996. Food Science (5th edition) CBS Publishers and Distributors, New Delhi.

OUTCOME:

This course will provide the students about the role of microbes in various food products, food spoilage and food quality.

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Objectives:

To enable the Students

- ✓ To understand the application of Nutritional biotechnology.
- ✓ To obtain knowledge about the recent trends in food technology.
- ✓ To know the basic concepts of sampling and data analysis.
- ✓ To understand the applications of statistical methods in scientific research.

BLOCK-I: FOOD PROCESSING TECHNOLOGY**Unit I**

Introduction to food biotechnology; Fermentation Technology – batch and continuous process, fermenter design, bioprocess control.

Unit II

Enzymes in food industry – Soluble enzymes, immobilized enzymes, amylase, invertase, isomerase – Synthesis, process and applications in food industries.

Unit III

Single cell protein – Production of microbial protein. SCP – substrates, nutritional value. Culture and process – spirulina, mushroom and yeast biomass production.

Unit IV

Regulatory aspects of biotechnology – Downstream processing, biosensors, biochips. Impact of biotechnology on the nutritional quality of foods.

BLOCKII: FOOD TOXICANTS, ADDITIVES AND FERMENTED FOODS**Unit V**

Natural food toxicants – Sources, toxicity, elimination – Lead, Mercury, Phthalates (used in plastics), Pesticides, haemagglutinins, cyanogens, saponins, gossypols, lathyragens, favism and carcinogens.

Unit VI

Biotechnology in food industries: Food additives, synthesis. Acidulants – citric acid, gluconic acid, lactic acid. Sweeteners – glucose syrup and High Fructose Corn Syrup (HFCS).

Unit VII

Fermented foods – Alcoholic beverages, cheese making, fermented soya based foods, meat fermentation, vinegar, safety aspects of foods produced by biotechnology.

BLOCK-III: INTRODUCTION TO BIOSTATISTICS**Unit VIII**

Introduction to biostatistics – Basic definitions and applications. Sampling – representative sample, sample size, sampling bias and sampling techniques.

Unit IX

Data collection and presentation – Types of data, methods of collection of primary and secondary data, methods of data presentation, graphical representation by histogram,

polygon, ogive curves and pie diagram.

Unit X

Data classifications – categories and measurements, discrete and continuous variables. Tabulation scheme, preparation of tabular forms, methods of securing accuracy in tabulation.

Unit XI

Surveys – Graphical and diagrammatic representations. Use of computers in data processing and presentation. Choice of the sample, random samples, systematic samples, cluster samples/multistage sample and quota sample. Sources of bias and methods of reducing bias.

BLOCK-IV: APPLIED STATISTICS

Unit XII

Measures of central tendency – Mean, median, mode, their relative advantages and disadvantages, Measures of dispersion, mean deviation, coefficient of variation, percentiles and percentile ranks.

Unit XIII

Correlation – Association of attributes, contingency table, correlation, coefficient of correlation and its interpretation, rank correlation, regression equations and predictions.

Unit XIV

Probability – Rules of probability and its applications. Distribution – Normal, binomial, their properties. Importance of distributions in statistical studies. Large and small samples, X and F tests, tests for independence using contingency, analysis of variance and applications.

REFERENCES

1. B Antonisamy, Prasanna S. Premkumar, Solomon Christopher, 2017. Principles and Practice of Biostatistics, Elsevier India.
2. Ravishankar Rai V, 2015. Advances in Food Biotechnology, Wiley-Blackwell.
3. Murray, R.K. 2012. Metabolism of xenobiotic in Harphers Biochemistry, 22nd Ed, V.W. Prentice Hall Inc.
4. Dubey , R.C. 2006. “A textbook of Bio-technology”, S.Chand and Company Ltd., New Delhi.
5. Kelly Anne Meckling, 2006. “Nutrient-Drug Interactions (Nutrition and Disease Prevention)” CRC Press.
6. J. Richard, Sundar P. S. S. Rao, 2006. “Introduction to Biostatistics and Research Methods”.
7. Marcello Pagano, Kimberlee Gauvreau, 2000. “Principles of Biostatistics” S.Chand (G/L) & Company Ltd; 2nd edition.
8. David Moore, George P. McCabe, 1998. “Introduction to the Practice of Statistics” 3rd Edition by W. H. Freeman.
9. Parar. F.S.K. 1997. Adverse drug reactions and treatment of poisoning and drug interactions, S. Chand and Co, New Delhi.
10. Irfan A Khan, Atiya Khanum, 1994. “Fundamentals of Biostatistics” Ukaaz Publications.

OUTCOME:

This course will provides the broad overview about the food processing techniques and fundamentals of biostatistics.

36544 - LAB. IV: PAEDIATRIC NUTRITION, FOOD MICROBIOLOGY AND SANITATION & FOOD BIOTECHNOLOGY & BIOSTATISTICS	
Maximum marks: 100	Credit: 4

Objectives:

To enable the students

- To study the importance of Paediatric nutrition
- To study the basic techniques of food microbiology and biotechnology
- To introduce the basics of various food processing and preservation technologies.
- To interpret the data using statistical tools.

PAEDIATRIC NUTRITION

1. Development of low cost recipes
 - a. Infants
 - b. Preschoolers
 - c. Elementary school children.

FOOD MICROBIOLOGY AND SANITATION

1. Isolation of microorganisms from spoiled food sample.
2. Pure culture and preservation of bacteria.
3. Gram staining
4. Motility test
5. Hydrolysis of starch, gelatin and protein.
6. Identification of prepared slides
 - a. Mould - mucor, rhizopus, aspergillus, penicillium, yeast
 - b. Bacteria – bacilli.

FOOD BIOTECHNOLOGY

1. Determination of pH of different foods using pH meter.
2. Study quality characteristics of foods preserved by drying/dehydration/ freezing.
3. To perform pasteurization of fluids using different methods.
4. To perform blanching of different plant foods.
5. Methods of Food sampling and concept of shelf life of different foods

BIOSTATISTICS

1. Tabulation and graphical representation of data
2. Calculation of mean, median and mode
3. Calculation of standard deviation, standard error and ANOVA (One way and Two way)
4. Chi-Square test, t-Test, Regression and correlation.

REFERENCES

1. B Antonisamy, Prasanna S. Premkumar, Solomon Christopher, 2017. Principles and Practice of Biostatistics, Elsevier India.
2. Sibal Anupam, 2015. Textbook of Pediatric Gastroenterology, Hepatology And Nutrition, Jaypee Brothers Medical Publishers; first edition.
3. Bawa. A.S, O.P Chauhan et al. 2013. Food Science. New India Publishing agency.
4. A. Catharine Ross, Benjamin Caballero, Thomas R. Ziegler M.D. 2012. Modern Nutrition in Health and Disease (Modern Nutrition in Health & Disease (Shils)), 11th Edition.
5. Rao PG, 2010. Fundamentals of Food Engineering, PHI Learning Pvt Ltd, New Delhi.
6. Ramaswamy H and Marcott M, 2006. Food Processing Principles and Applications CRC Press.
7. Meyer, 2004. Food Chemistry, New Age.
8. Frazier WC and Westhoff DC, 2004. Food Microbiology, TMH Publication, New Delhi.
9. B. Srilakshmi, 2002. Food science, New Age Publishers.
10. Toledo Romeo T, 1999. Fundamentals of Food Process Engineering, Aspen Publishers.
11. Desrosier NW and Desrosier JN, 1998. The Technology of Food Preservation, CBS Publication, New Delhi.
12. Potter NH, 1998. Food Science, CBS Publication, New Delhi.
13. Paine FA and Paine HY, 1992. Handbook of Food Packaging, Thomson Press India Pvt Ltd, New Delhi.

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M.Com

Sl. No	Course Code	Title of the Course	CIA Max.	ESE Max.	TOT Max.	C.
FIRST YEAR						
I Semester						
1	31011	Management Concepts	25	75	100	4
2	31012	Managerial Economics	25	75	100	4
3	31013	Advanced Accounting	25	75	100	4
4	31014	Business Environment	25	75	100	4
		Total	100	300	400	16
II Semester						
5	31021	Marketing Management	25	75	100	4
6	31022	Research Methodology	25	75	100	4
7	31023	Advanced Cost Accounting	25	75	100	4
8	31024	Financial Services	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III Semester						
9	31031	Investment Analysis and Portfolio Management	25	75	100	4
10	31032	Financial Management	25	75	100	4
11	31033	Principles of Personnel Management	25	75	100	4
12	31034	Corporate Accounting	25	75	100	4
		Total	100	300	400	16
IV Semester						
13	31041	Management Accounting	25	75	100	4
14	31042	Principles and Practice of Services Marketing	25	75	100	4
15	31043	Organizational Behaviour	25	75	100	4
16	31044	Retail and Distribution Management	25	75	100	4
		Total	100	300	400	16
Grand Total			400	1200	1600	64

Detailed Syllabi:

FIRST SEMESTER

Course Code	Title of the Course
31011	Management Concepts

Learning objectives:

1. To make the students to understand the elements of effective management
2. To familiarize the students with the basics principles of management

BLOCK I: FUNCTIONAL AREA OF MANAGEMENT

UNIT – I: Management: Definition – Nature – Scope and functions – Evolution of management thought – Relevance of management to different types of organization like, Insurance, Hospitals, Universities, Hotels, Social Service organizations etc.

UNIT – II: Planning: Nature, importance and strategic considerations in planning – Planning premises – Components of planning as objectives - Planning process – Methods of planning – Limitations of planning – Planning premises.

Unit – III: Policies, strategies, procedures, methods, rules, projects and budgets – Decision making – Meaning – Importance – Types – Process – Elements – Principles of decision making.

UNIT – IV: Organizing: Nature, purpose and kinds of organization – Structure – Principles and theories of organization – Formal organization – Informal organization.

Unit – V: Departmentation – Process of departmentation – Departmentation by functions
- Span of control – Line and staff functions – Authority and responsibility – Centralisation and decentralization.

BLOCK II: PERSONAL AREA OF MANAGEMENT

Unit – VI: Delegation - Importance of delegation – Types of delegation – Problems of delegation – Effective delegation.

UNIT - VII: Staffing – Elements of staffing – Functions of staffing - General principles and importance – Motivation: Meaning – Importance – Types – Theories.

UNIT – IX: Communication: Meaning – Types – Process – Barriers –

Overcoming barriers – Leadership: Meaning – Styles – Essential qualities.

UNIT – X: Controlling: Objectives and process of control – Devices of control – Integrated control – Special control techniques – Coordination – Need and techniques.

UNIT – XI: Directing – Principles of direction – Techniques of direction – Importance of direction – Characteristics of direction – Supervision – Functions of supervisor – Qualities of supervisor – Principles of supervisor.

BLOCK III: GUIDING AREA OF MANAGEMENT

UNIT – XII: Management Audit – Definition – Objectives – Scope of management audit – Need for management audit – Advantages of management audit.

UNIT – XIII: Business Ethics – Meaning – Need for business ethics – Principles of business ethics – Factors affecting business ethics – Management information system – Objectives of MIS – Importance of MIS – Process of MIS – Causes for poor MIS.

UNIT – XIV: Recent trends and new perspectives in management - Strategic alliances – Core competence – Business process reengineering – Total quality management – Bench marking.

REFERENCE BOOKS:

1. Ramaswamy.T, 2012, Principles of Management [Eight Edition] Himalaya Publishing Home Pvt Ltd, Mumbai.
2. Dinkar Pagare, 2011, Business Management [Fifth Edition] Sultan Chand & Sons, New Delhi.
3. Govindarajan. M, 2008, Principles of Management [First Edition] PHI, New Delhi.
4. Prasad L.M, 2015, Principles and Practice of Management [Eight Edition], Sultan Chand & Sons, New Delhi.

Course Code	Title of the Course
31012	Managerial Economics

Learning Objectives:

1. To discuss the relationship between economics and business.
2. To analyze the application of economic theories in modern business.

BLOCK I: MANAGERIAL ECONOMICS

UNIT – I: Nature and Scope of Managerial Economics – Concept of Managerial Economics - Role and Responsibilities of Managerial Economist – Goals of Corporate Enterprises: Maximization of profit - Value of enterprise.

UNIT – II: Demand analysis - Elasticity of demand- Factors influencing elasticity of demand - Demand determinants – Demand distinctions – Types, methods – Applications-emand forecasting for industrial goods – Consumer goods – Consumer durables.

UNIT – III: Cost and production analysis - Cost concepts – Cost and output relationship - cost control – Short run and Long run - cost functions - production functions – Break- even analysis – Economies of scale of production.

UNIT – IV: Pricing and output decisions in different market situations – Monopoly and Duopoly competition - Perfect and Imperfect competition - Pricing policies – Types - Factors affecting pricing policies.

UNIT – V: Business cycles – National income, monetary and fiscal policy – Public finance - Government Institutions, State Governments, Local Self-Government, Central Government – Industrial Sickness – Causes – Remedies.

BLOCK II: MANAGERIAL DECISION MAKING

UNIT – VI: Theory and nature of profit – Theories of profit – Depreciation and Profit – Valuation of stock and profit – Profit policies – Planning and forecasting – Calculation of break even point.

UNIT – VII: Managerial decision making – Risk and uncertainty – Decision theory – Classification of managerial decision problems – Analysis of decisions – Probability theorems.

UNIT – VIII: Economic planning and MRTP Act – Objectives of economic planning – Control of big business – Evil effects of economic concentration – Industrial policy – Features.

UNIT – IX: Consumer – Consumer’s sovereignty – Consumer’s surplus – Consumer’s surplus in a market – Assumption of consumer’s surplus.

UNIT – X: Business cycle and business policy – Characteristics of business cycle – Phases of business cycle – Depression – Inflation – Characteristics of inflation – Types of inflation – Demand pull inflation – Cost push inflation – Control of deflation – Effects on business cycle.

BLOCK III: ECONOMIC APPROCHES

UNIT – XI: Product line – Reasons required changing existing product mix – Factors determining the scope of product line – Product line pricing – Special order pricing – Pricing Complementary products.

UNIT – XII: Economic Concentration – Meaning of economic power – Domination of markets – Product-wise concentration – Country-wise concentration – Growth of Large industrial houses and concentration of economic power.

UNIT – XIII: Foreign investment – Types of foreign investment – FDI in developing countries – Guidelines for foreign investments – FII investments – Euro issues – FDI inflow in India.

UNIT – XIV: Government and business – Performance of public enterprises in India – Price policy in public utilities, government measures to control monopoly in India.

REFERENCE BOOKS:

1. Sankaran.S.2004, Managerial Economics. Margham Publications.
2. Gupta.G.S .2009, Managerial Economics. Tata McGraw-Hill Education Pvt.Ltd.
3. Cauvery.R., Dr. Sudha Nayak. U.K., Girija.M.and Dr.Meenakshi.R. 2010, Managerial Economics. S.Chand, New Delhi.
4. Maheswari.K.L and Varshney.R.L. 2014, Managerial Economics. [22nd Edition, Chand Sons, New Delhi.

Course Code	Title of the Course
31013	Advanced Accounting

Learning Objectives:

1. To make the students to understand the basic concepts of accounting applied in the competitive corporate world.
2. To understand accounting software easily.

BLOCK I : BASIC ACCOUNTING CONCEPTS

UNIT – I: Accounting Concepts and Conventions - Accounting Systems: Cash and mercantile systems – Advantages and Limitations of Accounting - Principles – Accounting standards.

UNIT – II: Fundamentals of Book Keeping – Journal – Ledger – Subsidiary books – Cash book - Trial balance.

UNIT – III: Single Entry System: Calculation of profit – Statement of Affairs method – Conversion of single entry into double entry system.

UNIT – IV: Preparation of profit and loss account and balance sheet under single entry system.

UNIT – V: Final Accounts of a Sole Trader – Trading Account, Profit and Loss Account and Balance sheet with adjustments – Differences between Trial Balance and Balance sheet – Errors and their rectification – Types of errors.

BLOCK II : FINANCIAL ACCOUNTING

UNIT – VI: Bills of Exchange : Promissory notes and bills of exchange – Recording of transactions relating to bills – Books of Drawer and Acceptor – Honour and dishonor of bills –Renewal of bills – Retiring of bills under rebate.

UNIT – VII: Account Current and Average Due Date – Meaning – Advantages – Calculation of Account Current and Average Due Date.

UNIT – VIII: Bank Reconciliation Statement –Need –Reasons for difference between cash book and pass book balances – Preparation of Bank Reconciliation Statement.

UNIT – IX: Non-Trading Accounts - Receipts and Payments and income and expenditure account and Balance sheet– Difference between Receipts and Payments and income and expenditure account.

UNIT – X: Depreciation – Meaning – Causes – objects of providing for depreciation – Factors affecting depreciation – Accounting Treatment – Methods of providing depreciation – Straight line method – Diminishing Balance Method – Change in method of Depreciation – Sinking fund method.

BLOCK III: TYPES OF BRANCHES OF ACCOUNTING

UNIT – XI: Accounting for consignments- Consigner’s book – Consignee’s book – Accounting for joint ventures - Joint ventures account – co-venture’s account – Joint bank account.

UNIT – XII: Investment accounts – Ex-interest – Cum-interest Types of securities – Fixed interest securities – Variable income securities – Royalty excluding Sublease - Methods of recoupment - Fixed recoupment of short workings – Flexible recoupment.

UNIT – XIII: Departmental accounts – Apportionment of common expenses – Ascertaining cost of departmental purchases Inter departmental transfers at cost or selling price – Branch – Dependent branches – Independent branches - excluding foreign branches.

UNIT – XIV: Hire purchase - Calculation of interest - installment systems - Default and Repossession including Hire Purchasing Trading account - Goods on sale or Return.

REFERENCE BOOKS:

1. Reddy, T. S. and Murthy, A. 2014, Financial Accounting [Sixth Edition], Margham Publications, Chennai.
2. Nagarajan, K. L., Vinayaka, N., and Mani P.L. 2013, Principles of Accountancy [First Edition], Sultan Chand & Company Ltd, New Delhi.
3. Jain, S. P., and Narang, K. 2005, Financial Accounting. [Fifth Edition], Kalyani Publishers, Ludhiana.
4. Grewal T.S. 2007, Introduction to Accountancy [Fifth Edition], Sultan Chand & Company Ltd, New Delhi.

Course Code	Title of the Course
31014	Business Environment

Learning Objectives:

1. To enhance the knowledge of business opportunities in current situation.
2. To enhance the capacity to making business polices.

BLOCK I: BUSINESS ENVIRONMENT

UNIT – I: Concept of Business Environment- Significance - Types of Environment- External and Internal – Inter-Relationship between economic and non-economic environment.

UNIT – II: Impact of environment on business and Strategic Decisions - Culture and business - Social Responsibilities of Business.

UNIT – III: Economic Systems – Meaning – Characteristics -Types of economic systems-Capitalism-Socialism-Mixed economy.

UNIT – IV: Economic planning - Nature, Scope and Significance of Economic Planning in India - Achievements and Failures of Economic Planning.

BLOCK II: INDUSTRIAL ENVIRONMENT

UNIT – V: Industrial Policies and Regulations - Industrial Policy upto 1991, 2014 - Public, Private, Joint and Co-operative Sectors.

UNIT – VI: Privatization and Disinvestment - Ways of Privatization - Benefits and Arguments against Privatization - Privatization in India.

UNIT – VII: Technological environment-Factors Governing Technological Environment- Management of technology - Patents and Trademarks.

UNIT – VIII: Indian Contract Act 1872 – Indian Companies Act 1956 – Consumer Protection Act 1986 – Consumer Rights – World Trade Organization (WTO).

UNIT – IX: Industrial Finance – Short term finance – medium term finance - long term finance – Corporate securities.

BLOCK III: INTERNATIONAL ENVIRONMENT

UNIT – X: Reserve Bank of India - Financial Institution in India – IFCI – ICICI – IDBI – IIBI – SIDBI – LIC – SIDCO – Commercial Banks – DFHI - SFCs.

UNIT – XI: Globalization - Meaning and Dimensions - Features of Current Globalization - Essential Conditions for Globalization - Globalization of Indian business.

UNIT – XII: Foreign Direct Investment - Concept, Advantages and Disadvantages and Determinants- India's policy towards FDI - Multinational Corporation – Meaning - Merits and Demerits - Control over MNCs - MNC in India.

UNIT – XIII: International Environment – Meaning and concept – World Bank – International Monetary Fund (IMF) – The General Agreement on Tariffs and Trade (GATT) – The World Trade Organization.

UNIT – XIV: Current Issues in Business Environment – Urbanization – Population – Public distribution system – Natural environment – Various aspects of the natural environment – Pollution – Environmental management.

REFERENCE BOOKS:

1. Francis Cherunilam. 2000, Business Environment, Himalaya Publishers.
2. Gupta. C. B., 2014, Business environment, (8th Edition), McGraw Hill Education India Private Limited.
3. Avadhani.V. A., 2004, Essentials of Business Environment, (2nd Edition), Himalaya Publication, Mumbai.
4. Shaikh Saleem, 2009, Business Environment, (2nd Edition), Dorling Kindersley (India) Private Limited.

SECOND SEMESTER

Course Code	Title of the Course
31021	Marketing Management

Learning Objectives:

1. To give the knowledge of updated marketing scenario.
2. To enhance the knowledge of marketing behavior of consumer among the students.

BLOCK I: THE STUDY OF MARKETING

UNIT – I: Marketing: Meaning – Scope – Importance – Approaches to the study of Marketing – Marketing Concept –

UNIT – II: Market Segmentation: Meaning – Bases for segmentation – Uses. Marketing Mix: Four P's in marketing – Marketing Planning – Importance – Types of planning.

UNIT – III: Marketing Environment – External factors – Internal factors – Consumer Behaviour – Meaning and importance – Consumer buying process – Determinants of consumer behaviour — Theories and their relevance to marketing.

BLOCK II: MARKETING MIX

UNIT – IV: Product Mix Management: Product planning and development – New Product development – Product Life Cycle – Meaning – Stages – Managing PLC – Product positioning – Branding – Packaging.

UNIT – V: Price Mix Management: Factors affecting pricing – Pricing and pricing policies – Objectives – Procedures – Methods of price fixation – Administered and regulated prices.

UNIT – VI: Physical Distribution Mix: Distribution channel policy – Types – Factors determining choice of channel – Channel management – Middlemen functions.

UNIT – VII: Promotional Mix: Personal selling Vs Impersonal selling – Personal selling process – Steps in selling – Compensation plans – Evaluation of salesmen performance.

BLOCK III: PROMOTIONAL METHODS

UNIT – VIII: Advertising: Importance – Objectives – Media planning and selection – Factors influencing selection – Advertising copy – Layout – Evaluation of advertising – Advertising budget – Sales Promotion methods – Publicity – Sales promotion tools.

UNIT - IX: Marketing Research & Marketing Information System: Meaning – Scope – Need – Elements – Research Process – Steps involved.

UNIT – X: Consumerism: Meaning – Consumer rights – Consumer movement in India – Salient provisions of Consumer Protection Act.

UNIT – XI: Co-operative marketing – Meaning – Features of Co-operative marketing – Advantages – Structure and organization – National Agricultural Co-operative Marketing Federation (NAFED).

UNIT – XII: E-Marketing – Meaning – Business models – Websites associated with e-marketing – Benefits of e-marketing – Limitations of e-marketing – Scope of e-marketing.

BLOCK IV: CUSTOMER RELATIONSHIP MANAGEMENT

UNIT – XIII: Concept of customer relationship management – Evolution – Scope – Differences between marketing and CRM – Types of CRM.

UNIT – XIV: Technology for customer relationship – Contact centre technology – CRM technology – Customer data management – Managing customer relationship – CRM measurement.

REFERENCE BOOKS:

1. Philip Kotler, 2014 Principles of Marketing (15th Edition 2014), Pearson Education Private Limited, New Delhi.
2. Pillai. R. S. N and Baghavathy .N, Modern Marketing (Edition 1987, Reprint 2012), Sultan Chand and sons Publishers, New Delhi.
4. Gupta C. B and Rajan Nair .N, Marketing Management, (Edition 1996 Reprint 2012), Sultan Chand and Sons Publishers, New Delhi.
5. Ramasamy. R. and Namakumari V. S, Marketing Management, (3rd Edition), McMillan India, Limited, New Delhi.

Course Code	Title of the Course
31022	Research Methodology

Learning Objectives:

1. To provide students with a firm foundation and understanding of business research methods and the research process.
2. To understand the relevance of and be able to apply a range of both quantitative and qualitative research methods.

BLOCK I: RESEARCH PROPOSAL

UNIT – I: Research: Meaning of research; Types of research- Exploratory research, Conclusive research; The process of research; Research applications in social and business sciences; Features of a Good research study.

UNIT – II: Research Problem and Formulation of Research Hypotheses: Defining the Research problem; Management Decision Problem Vs Management Research Problem; Problem identification process; Components of the research problem; Formulating the research hypothesis- Types of Research hypothesis; Writing a research proposal- Contents of a research proposal and types of research proposals.

UNIT – III: Research Design: Meaning of Research Designs; Nature and Classification of Research Designs; Exploratory Research Designs: Secondary Resource analysis, Case study Method, Expert opinion survey, Focus group discussions; Descriptive Research Designs: Cross-sectional studies and Longitudinal studies; Experimental Designs, Errors affecting Research Design.

BLOCK II: CLASSIFICATION OF DATA

UNIT – IV: Primary and Secondary Data: Classification of Data; Secondary Data: Uses, Advantages, Disadvantages, Types and sources; Primary Data Collection: Observation method, Focus Group Discussion, Personal Interview method.

BLOCK III: METHODOLOGY

UNIT – V: Attitude Measurement and Scaling: Types of Measurement Scales; Attitude; Classification of Scales: Single item Vs Multiple Item scale, Comparative Vs Non-Comparative scales, Measurement Error, Criteria for Good Measurement.

UNIT – VI: Questionnaire Design: Questionnaire method; Types of Questionnaires; Process of Questionnaire Designing; Advantages and Disadvantages of Questionnaire Method.

UNIT – VII: Sampling: Sampling concepts- Sample Vs Census, Sampling Vs Non Sampling error; Sampling Design- Probability and Non Probability Sampling design;

Determination of Sample size- Sample size for estimating population mean, Determination of sample size for estimating the population proportion.

UNIT – VIII: Data Processing: Data Editing - Field Editing, Centralized in house editing; Coding - Coding Closed ended structured Questions, Coding open ended structured Questions; Classification and Tabulation of Data.

UNIT – IX: Univariate and Bivariate Analysis of Data: Descriptive Vs Inferential Analysis, Descriptive Analysis of Univariate data- Analysis of Nominal scale data with only one possible response, Analysis of Nominal scale data with multiple category responses, Analysis of Ordinal Scaled Questions, Measures of Central Tendency, Measures of Dispersion; Descriptive Analysis of Bivariate data.

UNIT – X: Testing of Hypotheses: Concepts in Testing of Hypothesis – Steps in testing of hypothesis, Test Statistic for testing hypothesis about population mean; Tests concerning Means- the case of single population; Tests for Difference between two population means; Tests concerning population proportion- the case of single population; Tests for difference between two population proportions.

BLOCK IV: RESEARCH REPORT

UNIT – XI: Chi-square Analysis: Chi square test for the Goodness of Fit; Chi-square test for the independence of variables; Chi-square test for the equality of more than two population proportions.

UNIT – XII: Analysis of Variance: Completely randomized design in a one-way ANOVA; Randomized block design in two-way ANOVA; Factorial design.

UNIT – XIII: Research Report Writing: Types of research reports – Brief reports and Detailed reports; Report writing: Structure of the research report- Preliminary section, Main report, Interpretations of Results and Suggested Recommendations; Report writing: Formulation rules for writing the report: Guidelines for presenting tabular data, Guidelines for visual Representations.

UNIT – XIV: Ethics in Research: Meaning of Research Ethics; Clients Ethical code; Researchers Ethical code; Ethical Codes related to respondents; Responsibility of ethics in research – Uses of library and internet in research.

REFERENCE BOOKS:

1. Gupta S. L and Hitesh Gupta (2015), “Research Methodology: Text and Cases with SPSS Application”, International Book House Private Limited, New Delhi.
2. Peer Mohamed and Shazuli Ibrahim (2013), “Research Methodology”, Pass Publications, Madurai.

Course Code	Title of the Course
31023	Advanced Cost Accounting

Learning Objectives:

1. To enable the students to understand the Costing Terms in business.
2. To provide adequate knowledge on Cost Accounting Practice

BLOCK I: COST ACCOUNTING AND COST CONTROL

UNIT – I: Cost Accounting Principles: Meaning of cost and cost accounting – Objectives of cost accounting – Installation of a costing system.

UNIT – II: Elements of cost – Cost concepts – Cost classifications – Methods, systems and techniques of costing – Cost sheet.

UNIT – III: Cost Accounting for material cost control – Need for material cost control – Purchase control – Stores control – Stock levels – EOQ analysis.

UNIT – IV: Pricing of stores issues – Perpetual inventory control – ABC analysis – VED analysis – Treatment of waste, scrap, defectives and spoilage.

UNIT – V: Labour Cost Control – Time keeping and time booking – Treatment of idle time and overtime cost – Wage rates for costing – Systems of wage payment – Time wage and piece rate – Incentive schemes of wage payment – Labour turnover.

UNIT – VI: Overhead Cost Control – Classification of overheads – Allocation and appointment – Absorption of overheads – Different methods – Treatment of under absorption and over absorption of overheads.

BLOCK II: TYPES OF COSTING

UNIT – VII: Methods of Costing – Job costing – Contract costing – Profit on incomplete contracts – Cost plus contracts – Target costing – Escalation clause.

UNIT – VIII: Unit costing – Meaning – Cost accumulation – Procedure in unit costing – Preparation of cost sheet.

UNIT – IX: Process Costing – Features – Job costing Vs Process costing – Process cost accounts – Inter-process profits – Accounting for joint products and by products.

UNIT – X: Contract costing – Types – Procedure for contract costing – Contract plus costing – Profit from incomplete contract.

UNIT – XI: Operating Costing – Meaning – Features – Objectives – Cost Unit – Transport costing – Operating cost sheet.

UNIT – XII: Batch costing – Definition – Economic batch quantity – Applicability of batch costing.

UNIT - XIII: Standard Costing – Definition –Advantages and limitations of standard costing – Variance analysis.

BLOCK IV: RECONCILIATION OF COST AND FINAL ACCOUNT

UNIT – XIV: Reconciliation of cost and final accounts – Cost control and cost reduction – Meaning – Tools and techniques – Essentials for success of cost control and cost reduction – Distinction between cost control and cost reduction – Areas of cost reduction and control – Advantages.

REFERENCE BOOKS:

1. Jain, S. P., and Narang, K. L. 2001, Cost and Management Accounting [Fifth Edition], Kalyani Publishers, New Delhi.
2. Pillai, R. S. N., and Bagavathi, 2009, Cost Accounting [First Edition], Sultan Chand Company Ltd., NewDelhi.
3. Sharma, and Shashi K. Gupta, 2012, Management Accounting [Twelfth Edition], Kalyani Publishers, New Delhi.
4. Maheswari, S. N. 2003, Cost and Management Accounting [First Edition], Sultan Chand Company Ltd., New Delhi.

Course Code	Title of the Course
31023	Advanced Cost Accounting

Learning Objectives:

3. To enable the students to understand the Costing Terms in business.
4. To provide adequate knowledge on Cost Accounting Practice

BLOCK I: COST ACCOUNTING AND COST CONTROL

UNIT – I: Cost Accounting Principles: Meaning of cost and cost accounting – Objectives of cost accounting – Installation of a costing system.

UNIT – II: Elements of cost – Cost concepts – Cost classifications – Methods, systems and techniques of costing – Cost sheet.

UNIT – III: Cost Accounting for material cost control – Need for material cost control – Purchase control – Stores control – Stock levels – EOQ analysis.

UNIT – IV: Pricing of stores issues – Perpetual inventory control – ABC analysis – VED analysis – Treatment of waste, scrap, defectives and spoilage.

UNIT – V: Labour Cost Control – Time keeping and time booking – Treatment of idle time and overtime cost – Wage rates for costing – Systems of wage payment – Time wage and piece rate – Incentive schemes of wage payment – Labour turnover.

UNIT – VI: Overhead Cost Control – Classification of overheads – Allocation and appointment – Absorption of overheads – Different methods – Treatment of under absorption and over absorption of overheads.

BLOCK II: TYPES OF COSTING

UNIT – VII: Methods of Costing – Job costing – Contract costing – Profit on incomplete contracts – Cost plus contracts – Target costing – Escalation clause.

UNIT – VIII: Unit costing – Meaning – Cost accumulation – Procedure in unit costing – Preparation of cost sheet.

UNIT – IX: Process Costing – Features – Job costing Vs Process costing – Process cost accounts – Inter-process profits – Accounting for joint products and by products.

UNIT – X: Contract costing – Types – Procedure for contract costing – Contract plus costing – Profit from incomplete contract.

UNIT – XI: Operating Costing – Meaning – Features – Objectives – Cost Unit – Transport costing – Operating cost sheet.

UNIT – XII: Batch costing – Definition – Economic batch quantity – Applicability of batch costing.

UNIT - XIII: Standard Costing – Definition –Advantages and limitations of standard costing – Variance analysis.

BLOCK IV: RECONCILIATION OF COST AND FINAL ACCOUNT

UNIT – XIV: Reconciliation of cost and final accounts – Cost control and cost reduction – Meaning – Tools and techniques – Essentials for success of cost control and cost reduction – Distinction between cost control and cost reduction – Areas of cost reduction and control – Advantages.

REFERENCE BOOKS:

5. Jain, S. P., and Narang, K. L. 2001, Cost and Management Accounting [Fifth Edition], Kalyani Publishers, New Delhi.
6. Pillai, R. S. N., and Bagavathi, 2009, Cost Accounting [First Edition], Sultan Chand Company Ltd., NewDelhi.
7. Sharma, and Shashi K. Gupta, 2012, Management Accounting [Twelfth Edition], Kalyani Publishers, New Delhi.
8. Maheswari, S. N. 2003, Cost and Management Accounting [First Edition], Sultan Chand Company Ltd., New Delhi.

Course Code	Title of the Course
31024	Financial Services

Learning Objectives:

1. On successful completion of this course, the student should know about the methods of financing by the agencies and the key role Played by them in Corporate Financing.
2. Understand the tradeoff between risk and reward in investing.

BLOCK I: PRIMARY AND SECONDARY MARKET

UNIT – I: Nature and various facets of financial service industry – Analysis of financial services – Need for financial innovation.

UNIT – II: Money Market in India – Indian Capital Markets – Difference between Money Market and Capital Market – Classification and objectives of Indian Money Markets and Structure of Capital Markets.

UNIT – III: Financial services and market environment – Development of financial markets – Global integration of financial market – Finance Companies: Functions, strengths and weaknesses.

UNIT – IV: Secondary Markets – Stock Exchange – Role of Secondary Market – Trading in Stock Exchange – Various Speculative Transactions – Role of SEBI – Regulation of Stock Exchange.

UNIT – V: Banks as Financial Intermediaries – Commercial Banks Role in Financing – IDBI – IFCI – LIC – GIC – UTI – Investments Companies.

BLOCK II: FINANCIAL INSTITUTIONS

UNIT – VI: Markets for Corporate Securities – New Issue Markets – Functions Issue Mechanism – Under writing.

UNIT – VII: Commercial Banking and their fund based and non-fund based financial services – Leasing – Steps in leasing transactions – Lease finance – Accounting and reporting for lease.

UNIT – VIII: Hire purchase financing: Salient features, guidelines, functions – Components of hire purchase contract – Hire purchase agreement – Cost of hire

purchase.

UNIT – IX: Mutual Funds: Types of mutual funds – Floatation – Asset Management Company of mutual funds – Regulations.

BLOCK III: BILL MARKET

UNIT – X: Factoring – Forfeiting – Securitization – Venture capital – Consumer finance and credit cards: Salient features, guidelines, functions – Strategies involved in financing.

UNIT - XI: Merchant Banking including public issue management – Underwriting – Portfolio management – Stock and security broking – Merger and Takeover: Salient features – Guidelines – Functions.

UNIT - XII: Foreign Exchange Broking – Bills discounting – Financial consultancy – Corporate advisory services – Credit rating services – Salient features – Guidelines – Functions.

UNIT – XIII: Housing Finance – Advantages – Method of housing finance – Role of NHB – Borrowing powers of national housing bank – Export finance – Need for export finance – Different types of export finance.

UNIT - XIV: Non-banking Financial Companies: Regulations of RBI – Role of NBFCs – Chit funds – Functions of chit fund companies and Finance companies.

REFERENCE BOOKS:

1. Gordon E, and Natarajan K, 2009, “Financial Markets and Services”, Himalaya Publishing House Pvt. Ltd., India.
2. Guruswamy S, 2009, “Financial Services”, Tata McGraw-hill Education, New Delhi.
3. Prasanna Chandra, 2011 “Financial Management Theory and Practice”, Tata Mc Graw-Hill Education, New Delhi.
4. Khan M Y and Jain P K, 2008, “Financial Management Text, Problems and Cases”, Tata McGraw-Hill Education, New Delhi.
5. Banerjee G and Banerjee S. Borrowing from Financial Institutions, UDH publishing house Delhi.
6. Bhole .L. M, “Financial Institutions’ and Markets: Structure Growth and Innovations”, Tata McGraw-Hill Publishing Co Ltd.

THIRD SEMESTER

Course Code	Title of the Course
31031	Investment Analysis and Portfolio Management

Learning Objectives:

1. To understand the characteristics of securities markets and the instruments traded therein.
2. To be able to analyze the risk, return of securities and to manage portfolios of investments.

BLOCK I: INVESTMENT AVENUE

UNIT – I: Investment: Concepts and goals – Types of investment: Financial, Real, Business, Personal and Institutional – Comparison of investments, speculation, gambling and hedging – Concept of portfolio management: Goals – Risk and return trade-off.

UNIT – II: Financial Investment Avenues: Fixed income and Varying income securities Factors influencing Investment – Investment media – Features of investment Programme – Investment Process – Development of Financial system in India.

UNIT - III: Investment Analysis - Aspects of analysis – Return Analysis: Concepts, measures and computation of return of individual security and portfolio.

UNIT – IV: Capital Market – New issue Market and Stock Exchange in India – B.S.E - N.S.E – OTCEI – Kinds of Trading activity – Listing of Securities – SEBI and its Role and guidelines.

UNIT – V: Risk Analysis: Concepts, types, measure, computation of risk of individual security and portfolio – Valuation Analysis: Share and bond valuation – Price Earnings Analysis.

BLOCK II: FUNDAMENTAL OF TECHNICAL ANALYSIS AND DERIVATIVES

UNIT – VI: Investment Alternatives – Investment in Equity Shares, Preference shares, Bonds, Government Securities.

UNIT – VII: Mutual Funds – Real Estate – Gold – Silver – Provident fund – Unit Trust – National Savings Scheme – LIC.

UNIT – VIII: Approaches to Investment Analysis - Fundamental Analysis - Concept and components – Tools of economy, industry and company analysis.

UNIT – IX: Technical Analysis - Concept and tools – Assumption – Theories - Dow theory – Contrary opinion – Confidence index, Breadth of market and Relative strength analysis – Moving average analysis – Chart patterns.

UNIT – X: Options and Futures – Types of options – Call option – Advantages of options – Limitations – Valuation of options – Characteristics of options – Future – Forwards and futures – Differences between futures and options.

BLOCK III: PORTFOLIO CONSTRUCTION AND PERFORMANCE MEASURES

UNIT – XI: Portfolio Construction and Choice - Markowitz diversification – Efficient frontier – Risk-return indifferent curves – Portfolio choice – Single and two factorial models – Lagrange multiplier method.

UNIT – XII: Portfolio Performance Measures: Sharpe, Treynor and Jensen – Portfolio Audit and Portfolio Revision: Need and methods – Formula plans.

UNIT – XIII: Capital Asset Pricing Model – Assumptions and application – Capital market line and security market line.

UNIT – XIV: Efficient market hypotheses – The weakly efficient, semi strongly efficient and strongly efficient market forms – Random-walk theory.

REFERENCE BOOKS:

1. Preeti Singh, 2008, Investment Management [Sixteenth Edition], Himalaya Publishing House Pvt. Ltd., Mumbai.
2. Bhalla, V.K. 2008, Investment Management, Security Analysis and Portfolio Management [Fourteenth Edition]. Sultan Chand & Company Ltd., New Delhi.
3. Avadhani, V.A. 2008, Investment Management [Seventh Edition], Himalaya Publishing House, Mumbai.
4. Gangadhar, V., and Ramesh Babu, G. 2003, Investment Management [First Edition], Anmol Publication Pvt. Ltd., New Delhi.

Course Code	Title of the Course
31032	Financial Management

Learning Objectives:

1. To reveal the knowledge on fund utilization and management.
2. To analyze the various concepts and techniques for better financial decision.

BLOCK I FINANCIAL MANAGEMENT AND ITS SOURCES

UNIT – I: Financial Management: Concept, nature, evaluation and significance – Finance functions – Managerial and operative – Investment – Function, meaning and scope – Financing function – Meaning and scope – Dividend function.

UNIT – II: Goals of Financial Management – Types – Maximization of profit, profitability / wealth / liquidity / solvency – Minimization of risk, cost of capital, dilution of management control etc. – Risk – Return trade off – Maximization and minimization Vs optimization.

UNIT – III: Sources of finance – Long term sources – Short term sources – Sources of working capital – Equity shares – merits and demerits – Preference shares – merits and demerits – Debentures – Merits and demerits – Elements of financial system – Structure of Indian capital market.

UNIT – IV: Capitalization – Meaning – Need – Theories of capitalization – Over capitalization – Merits and demerits - Under capitalization – Merits and demerits.

BLOCK II: DETERMINATION OF RESOURCES

UNIT – V: Financial decisions – Relationship between Risk and Return – Sources of finance – Short-term and Long-term finance.

UNIT – VI: Long Term Capital Resources – Equity and debt sources – Equity share, preference shares and debentures as sources of long term capital – Relative merits, demerits and uses.

UNIT – VII: Significance of convertible issues and right issues – Borrowings from term lending institutions – The institutional framework – Types of assistance – Public deposits.

BLOCK III: CAPITAL MANAGEMENT

UNIT – VIII: Working Capital: Concept and types – Determinants – Financing

approaches – Conservative – Aggressive and hedging approaches – Their risk – Return features and significance – Sources of working capital finance – Working capital financing by commercial banks.

UNIT – IX: Capital Planning – Determinants of capital structure – Optimum capital structure – Capital structure theories – Net income and net operative income theories

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M.M. Theory – Traditional theory – Their assumptions – Significance and limitations. UNIT – X: Cost of Capital Concept – Cost of debt, equity, preference share capital, retraining earning – Weighted average cost – Book weight, market weight – Marginal cost of capital use and computations.

UNIT – XI: Capital Budgeting: Concept – Significance – Methods of appraisal: Pay- back periods, ARR, IRR, NPV, Simulation and Certainty equivalent methods.

BLOCK IV: LEVERAGES AND INTERNATIONAL MANAGEMENT

UNIT - XII: Leasing: Concept – Types – Significance – General considerations – Economics of leasing – Evaluation – Present value and IRR methods – Leverage – Concept – Types – Degree of operative leverage – Financial leverage and total leverage – Implications of high and low degrees of leverages.

UNIT – XIII: Dividend Theories: Valuation under Gordon and Walter theories – Dividend irrelevance under M.M. Theory – Assumptions – Limitations – Dividend policy Different policies and practices – Factors affecting dividend decision.

UNIT – XIV: International Financial Management – Meaning – FOREX Market operations – Export credit needs – India's export finance – Methods of international payments – Letter of credit – Kinds of letter of credit – Foreign currency finance Export documents.

REFERENCE BOOKS:

1. Sharma R. K and Shasi, K. Gupta, 2014, Financial Management, (4th Edition), Kalyani Publishers, New Delhi.
2. Pandey I. M. 2009, Financial Management, (10th Edition), Vikas Publishing House.
3. Prasanna Chandra, 2012, Financial Management, (4th Edition), Tata McGraw-Hill Publishers.
4. Maheswari S.N. 2014, Financial Management, (26th Reprint) Vikas Publishing

Course Code	Title of the Course
31033	Principles of Personnel Management

Learning Objectives:

1. To evaluate and apply theories of social science disciplines to workplace issues.
2. To enhance their effectiveness for optimizing the human resource potential of their organization in order to achieve business and strategic objectives.
3. To examine current issues, trends, practices, and processes in personnel management.

BLOCK I: HUMAN RESOUCCE PLANNING

UNIT – I: Personnel Management – Definition – Objectives and functions – Role and structure of personal function in organizations – Personnel principles and policies – Managerial functions – Operative functions.

UNIT – II: Job Evaluation – Job Analysis – Job Design – Job Description – Job Specification – Methods of job evaluation – Ranking method – Advantages and disadvantages of job evaluation.

UNIT – III: Human Resource Planning: Characteristics – Need for planning – Human Resource Planning Process – Factors influencing human resource plan – Limitations of human resource planning – Forecasting the demand for HR.

UNIT – IV: Organizing the human resource – Definitions – Process of organization – Importance of organization – Organization Structure – Principles of organization – Theories of organization.

UNIT – V: Recruitment - Selection Process - Placement and induction – Training and development – Need for training – Importance of training – Essentials of good training programme - Promotion – Demotions – Transfers – Separation.

BLOCK II: MEASURING AND MAINTAINING THE PERSONAL

UNIT – VI: Performance appraisal – Meaning – Features of performance appraisal – Methods of performance appraisal - Human relations - approaches to good human relations – Punishment.

UNIT – VII: Wage and Salary Administration: Factors – Principles – Compensation plan
– Individual –Group – Incentives – Bonus – Fringe benefits – Job evaluation systems
– Wage and salary administration in relation to personal taxation.

UNIT – VIII: Motivation – Definition – Characteristics of motivation – Importance of motivation – Process of motivation – Types of motivation – Theories of motivation.

UNIT – IX: Leadership – Meaning – Need and characteristics of leadership – Importance of leadership – Qualities of a leader – Different kinds of leadership styles – Theories of leadership.

UNIT – X: Morale and job satisfaction – Meaning – Characteristics of morale – Morale and productivity – Measurement of morale – Determinants of job satisfaction – Personal factors – Organizational factors.

UNIT – XI: Absenteeism – Meaning – Causes of absenteeism – Measures to control absenteeism – Discipline and grievance – Objectives of discipline – Characteristics of grievance – Cause of grievance.

UNIT – XII: Employee maintenance and integration – Welfare and society – Accident prevention – Administration of discipline – Employee motivation – Need and measures.

BLOCK III: INDUSTRIAL RELATION

UNIT –XIII: Industrial relations - Trade unionism - Collective bargaining and worker's participation in management – Quality of work life.

UNIT – XIV: Personnel Records / Reports: Personnel Research and Personnel Audit: Objectives – Scope and importance.

REFERENCE BOOKS:

1. Tripathi P.C., 2013, Personnel Management and Industrial Relations, Sultan Chand and Sons, New Delhi.
2. Aswathappa K., 2013, Human Resource Management: Text and Cases, McGraw Hill Education, New Delhi.
3. Memoria C.B. & Rao V.S.P., 2014, Personnel Management - Text & Cases, Himalaya Publishing house, New Delhi.
4. Khanka S.S., 2007, Human Resource Management - Text & Cases, S. Chand & Company Ltd., New Delhi.

Course Code	Title of the Course
31034	Corporate Accounting

Learning Objectives:

1. To give a clear understanding and knowledge to the students in the area of corporate accounting and other related matters.
2. To provide the knowledge based on corporate need to have a global perspective and grow accordingly.

BLOCK I: COMPANY ACCOUNTS

UNIT – I: Issue of shares: Par, Premium and Discount - Forfeiture - Reissue - Surrender of Shares - Right Issue – Underwriting.

UNIT – II: Redemption of Preference Shares – Provisions of the companies Act - Debentures - Issue – Treatment of different items relating to debenture in final accounts – Redemption – Methods of redemption of Debenture - Sinking Fund Method – Insurance Policy method.

UNIT – III: Final Accounts of Companies – Trading Account – Profit and Loss Account – Profit and Loss Appropriation Accounts – Balance sheet - Managerial Remuneration – Remuneration payable to different categories of managerial personnel – Calculation of Managerial remuneration.

UNIT – IV: Valuation of Goodwill - Need - Methods of valuation of Goodwill - Average Profit method – super profit method – capitalization method.

UNIT – V: Shares - Methods of valuation of Shares – Net asset method – Yield Method – Fair value Method.

UNIT – VI: Liquidation of Companies –Modes of Winding up - Statement of Affairs - Deficiency account or Surplus Account.

UNIT – VII: Company Final accounts – Schedule VI Part I and Part II – Profit prior to incorporation - Managerial remuneration – Preparation of profit and loss account and Balance Sheet.

BLOCK II: ALTERATION OF CAPITAL

UNIT – VIII: Amalgamation – Meaning – Advantages – Purchase consideration – Types of amalgamation – Net present value method - Absorption (Excluding inter – company holdings).

UNIT – IX: External reconstruction and Internal reconstruction – Meaning – Accounting treatment – Alteration of share capital – Capital reduction account.

UNIT – X: Holding company accounts excluding inter-company holdings – Mutual Owings - Contingent Liability - Unrealized Profit - Revaluation of Assets.

UNIT – XI: Liquidation of companies – Meaning – Reasons for winding up – Liquidator – Preferential creditors – Calculation of liquidator’s remunerations – Liquidator’s final statement of accounts.

BLOCK III: BANKING COMPANY

UNIT – XII: Accounts for banking companies - Preparation of profit and loss account and balance sheet - Accounts for Insurance Companies - Preparation of profit and loss account and balance sheet.

BLOCK IV: FINANCIAL REPORTING STANDARD

UNIT – XIII: International Financial Reporting Standards (IFRS) – Meaning – Advantages - Disadvantages.

BLOCK V: HUMAN RESOURCE ACCOUNTING

UNIT – XIV: Human resource accounting - Characteristic, Applications methods - Principles of Government accounting – Principles of Responsibility accounting.

REFERENCE BOOKS:

1. Dr. M. A. Arulanandam, and Dr. K. S. Raman, 2003, “Advanced Accountancy, Part-I” - Himalaya Publications, New Delhi.
2. Jain S. P. & Narang K. L., 2004 - “Advanced Accounting” - Kalyani Publishers, New Delhi.
3. Gupta R. L. & Radhaswamy M., 2006, “Corporate Accounts – Theory, Method and Application”, Sultan Chand & Co., New Delhi.
4. Reddy & Murthy, 2004, “Financial Accounting” - Margham Publicatuions, Chennai.
5. Jain S. P and Narang K. L. 2004, Corporate Accounting, (First Edition) Kalyani Publications, Chennai.
6. Joseph. T. 2009, Corporate Accounting, Vol. 1, (1st Edition), Tata McGraw-Hill Education Pvt. Limited, New Delhi.

FOURTH SEMESTER

Course Code	Title of the Course
31041	Management Accounting

Learning Objectives:

1. To enable the students to understand the conceptual framework of Management Accounting.
2. To acquaint the students with the Management Accounting Techniques that facilitates managerial decision making.

BLOCK I: MANAGEMENT ACCOUNTING CONCEPTS

UNIT – I: Management Accounting: Definition – Scope – Objectives – Functions – Role – Importance – Limitations – Management accounts Vs Financial accounting – Management and Cost accounting.

UNIT – II: Installation of management accounting system – Tools of management accounting – Reporting.

BLOCK II: FINANCIAL ANALYSIS

UNIT - III: Financial Statement Analysis: Financial Statements – Nature and limitations of financial statements – Analysis and Interpretation.

UNIT – IV: Comparative statements – Common size statements – Criticism of published accounts and cost accounting.

UNIT - V: Ratio Analysis – Significance and uses – Important managerial uses of ratio analysis.

UNIT – VI: Types of ratios – Profitability ratios – Turnover ratios – Liquidity ratios – Proprietary ratios – Market earnings ratios – Factors affecting efficiency of ratios.

UNIT – VII: Uses of ratio analysis – Uses and limitations – Construction of profit and loss account and balance sheet with ratios and relevant figures.

UNIT - VIII: Fund Flow Analysis - Need and meaning – Preparation of schedule of change in working capital and the fund flow statement – Projected fund flow statement – Managerial uses and limitations of fund flow analysis

UNIT – IX: Cash Flow Analysis - Need – Meaning – Preparation of cash flow statement
– Managerial uses of cash flow statement – Limitations – Differences between fund flow and cash flow analysis.

BLOCK III: COST ANALYSIS

UNIT - X: Budgeting: Meaning of Budget and Budgetary Control – Importance – Limitations – Classification of budgets and budgets preparation – Cash budget – Sales budget – Production budget.

UNIT – XI: Materials purchase budget - Fixed and flexible budgeting – Performance budgeting – Master budget - Zero-base budgeting.

UNIT - XII: Marginal Costing and Break Even Analysis: Definition – Marginal costing Vs Absorption costing – Justification for marginal costing – Marginal cost sheet – Segregation of semi-variable costs – Contribution – Key factor.

UNIT – XIII: Managerial uses of marginal costing – Pricing decisions – Level of activity planning – Mix of sale – Profit planning techniques – Make or buy decisions.

UNIT – XIV: Break-even Analysis – Break-even meanings, chart and graph – P/V ratio – Margin of Safety – Assumptions of break – Even analysis – Limitations of break-even analysis – Advantages and limitations of marginal costing – Differential costing.

REFERENCE BOOKS:

1. Sharma., and Gupta, S. K. (2006), Management Accounting, Kalyani Publishers, New Delhi.
2. Reddy, T. S., and Hari Prased Reddy, Y. (2010), Management Accounting, Margham publications, Chennai.
3. Maheswari, S. N. (2004), Management Accounting, Sultan Chand & Sons, New Delhi.
4. Jain, S. P., and Narang. K. L. (2001), Cost and Management Accounting, Kalyani Publishers, New Delhi.

Course Code	Title of the Course
31042	Principles and Practice of Services Marketing

Learning Objectives:

1. The objective of this course is to facilitate understanding of the conceptual framework of marketing
2. Its applications in decision making under various environmental constraints.

BLOCK I: SERVICE MARKETING

UNIT – I: Services: Meaning and definition of services – Importance of services in Indian Environment – Classification of services – Characteristic features of services – Growth of the service sector – Economic policy on services – Differences between goods and services.

UNIT – II: Service Marketing: Concept – Significance – Customer’s expectation in Service Marketing – Managing demand and supply in service business.

UNIT – III: Service design – Factors to be considered in designing service process – Guiding principles in service design – Service marketing system – Types of services layouts – Service mapping.

BLOCK II: SERVICE MARKETING MIX

UNIT – IV: Marketing Mix for Services – Characteristics of service marketing mix – Sales promotion – Physical evidence – Types of physical evidence.

UNIT – V: Service product – Meaning – Customer benefit concept – Core service level – The service offer – Product planning and development - Quality management.

UNIT – VI: Pricing in services – Meaning of price – Objectives of pricing – Characteristics of services and prices – Service cost – Approaches to pricing services – Methods of demand based pricing.

UNIT – VII: Service promotion – Market communication – Communication process – Determining the communication objectives – Selecting the communication channels – Service communication – Steps in advertising process.

UNIT – VIII: Location of services and channels of distribution – Location – Factors to be considered in choosing a service location – Classification of services by location – Direct distribution – Franchising – Agents – Customer segmentation.

UNIT – IX: People in services marketing mix – Service personnel – Contact personnel – Role of frontline employees – Hiring the right people – Service culture.

UNIT – X: Physical evidence – Classification of physical evidence – Role of the service cape – Peripheral evidence – Guidelines for physical evidence strategy.

BLOCK III: INTERNAL SERVICE MARKETING

UNIT – XI: Internal marketing – Objectives – Role of internal marketing – Components of internal marketing – External marketing – Relationship marketing – Goals of relationship marketing – Customer relationship management – Objectives of CRM.

UNIT – XII: Marketing mix of selected services - Personal care marketing – Entertainment Marketing – Education Marketing – Communication Marketing – Electricity Marketing.

UNIT – XIII: Key Services Marketing: Banking services – Insurance services – Transport services – Tourism services – Hotel services- Consultancy services – Hospital services - Market segmentation.

UNIT – XIV: Service Quality: Measurement of Service Quality – Scope of Service Quality – Tools for achieving Service Quality – Causes of Service Quality – Problems – Principles of service quality.

REFERENCE BOOKS:

1. Reddy P. N. Appannaiah, H. R. Anil Kumar, S and Nirmala, 2000, Services Marketing, Himalaya Publishing House.
2. Jha S. M., 2014, Services Marketing, (7th Edition) Himalaya Publishing House.
3. Dr. Shajahan. S., 2001, Services Marketing, (Revised Edition 2003) Himalaya Publishing House.
4. Ramneek Kappor, Justin Paul, and Biplab Halder, 2011, Service Marketing, Tata McGraw Hill Education Limited.

Course Code	Title of the Course
31043	Organizational Behaviour

Learning Objectives:

1. To grasp the organizational theories that would enlighten the understanding of human behaviour at work.
2. To understand team and group process and to be able to address issues arising from individual and collective organizational behaviour behavior.

BLOCK I: ELEMENTS OF BEHAVIOUR

UNIT – I: Organizational behaviour – Characteristics of human behaviour - Meaning – Definition – Nature of organizational behaviour – Basic objectives of organizational behaviour – Key elements of organizational behaviour – Importance of organizational behaviour.

UNIT – II: Foundations of Individual behaviour – Positive individual behaviour – Negative individual behaviour – Factors influencing individual behaviour – Personal factors – Environmental factors – Behavioural models.

UNIT – III: Personality – Definitions – Determinants of personality – Influence of personality on behaviour – Personality traits – Influencing behaviour – Personality development – Personality theories.

UNIT – IV: Perception – Definitions – Sensation and perception – Process of perception – Determinants of perception – Qualities of perceiver - Learning – Meaning and definition – Nature and characteristics of learning – Theories of learning.

UNIT – V: Attitude and Values – Definitions – Nature and characteristics of attitude and values – Measurement of attitude – Functions of attitude – Attitude change – Values and attitudes – Types of values – Formation of values.

BLOCK II: ORGANIZATION AND DEVELOPMENT

UNIT – VI: Groups in organization – Meaning – Characteristics – Reasons for formation of groups – Types of groups – Different stages of groups – Group norms – Group cohesiveness – Decision making and the group – Individual and group decisions.

UNIT – VII: Work Stress – Stress and counselling – Causes of stress – Personal factors – Organizational factors – Stress-performance relationship – Psychological problems – Behavioural changes – Escaping stress – Coping with stress – Counselling.

UNIT – VIII: Organizational change – Meaning – Factors influencing change – internal factors – External factors – Resistance to change – Possible benefits of resistance – Organizational development – Objectives of OD – Evaluation and follow up – Organizational development – Merits and Demerits.

UNIT – IX: Organizational Culture and Climate – Types – Determinants – Changing organizational culture – Organizational climate – Determinants of organizational culture

– Impact of organizational climate – Measures.

UNIT – X: Organizational Conflicts – Definitions – Causes of conflicts – Different stages of conflict – Conflict and performance – Measures to stimulate conflicts – Conflict outcomes.

BLOCK III: ORGANIZATIONAL PROCESS

UNIT – XI: Career planning – Meaning and characteristics – Need for career planning – Process of career planning – Preparing and implementing action – plans – Evaluation of career planning Limitations.

UNIT – XII: Emotional Intelligence – Emotions – Types of emotions – Managing emotions – Emotional intelligence – Dimensions of emotional intelligence – Advantages and limitations of emotional intelligence.

UNIT – XIII: Power, Politics and Impression management – Power, authority and influence – Sources – Organizational politics – Nature of organizational politics – Negative impact of organizational conflicts.

UNIT – XIV: Communication and knowledge management – Meaning of communication – Functions – Communication process – Directions of communication – Types of communication – Knowledge management – Dimensions of knowledge management – Knowledge management processes.

REFERENCES:

1. Khanka S. S, “Organisational Behaviour” Sultan Chand & Sons Publications, New Delhi (2012).
2. Aswathappa K, “Organisational Behaviour”, Himalaya Publications, New Delhi (2011).
3. Varma, “Organisational Behaviour”, Forward Book Depot, New Delhi (2013).
4. Sharma, “Organisational Behaviour”, Tata McGrew-Hill Publications, New Delhi (2012).

Course Code	Title of the Course
31044	Retail and Distribution Management

Learning Objectives:

1. To enhance the knowledge in basic strategies of retail management
2. To analyze the multiple channels of distribution system in present marketing scenario.

BLOCK I: RETAIL LOCATION

UNIT – I: Retailing – Definition – Retail industry and economy – Retail industry in India

– Characteristics of retailing – Role of services in retailing – Functions of retailing – Categorizing retailers – Trends in retail formats – Retail strategy.

UNIT – II: Retail organizations – Changing structure of retailing – Theories of structural change in retailing – Classification of retail units – Method customer interaction.

UNIT – III: Retail in India – Emergence of organized retailing – Traditional retail formats – Modern retail formats in India – Retailing to rural India – Product categories – Challenges in retail business in India.

UNIT – IV: Retail customer – Consumer behaviour – Factors affecting consumer decision making – Stages of the consumer decision process – Types of consumer decision making – Shopping behaviour.

UNIT – V: Retail market segmentation – Benefits – Criteria for effective market – Kinds of markets – Dimensions for segmentation – Customer profile – Market segmentation in India.

UNIT – VI: Retail location strategy – Importance of location decision – Determining factors – Types of retail location – Site selection analysis – Selection of particular shopping centre – Retail location theories.

BLOCK II: RETAIL MARKETING

UNIT – VII: Product management – Brand management and retailing – Merchandise management – Model stock plan – Types of suppliers – Category management – Various retail segments.

UNIT – VIII: Retail pricing – External influences on retail pricing strategy – Developments in retail prices – Retail pricing objectives – Role of price elasticity.

UNIT – IX: Retail promotion strategy – Selection of promotion mix – Advertising – Media selection- Sales promotion – Personal selling – Publicity.

UNIT – X: Relationship marketing in Retailing – Evolution of relationship marketing – Relationship marketing strategies in retailing – Organized and unorganized retail store.

UNIT – XI: Marketing Channels - Structure, Functions and Significance - Basic Channel, Role in the dynamic market place - Designing the Market Channel system.

UNIT – XII: Managing Marketing Channels - Channel Policies - Choice of the channel - Organizational Pattern in the Channel - Assessing Channel Performance - Causes for Channel Conflict - Techniques to overcome Channel Conflict- Channels for Consumer Goods, Industrial Goods and Services- Multi-level Marketing - Concepts, Role and Significance.

BLOCK III: RETAIL OPERATION DIMENSIONS

UNIT – XIII: Primary participants of the Channel - Manufacturer, Wholesaler and Retailer - Logistics and Operational dimensions - Material Handling, Transportation, Warehousing, Inventories, Logistics interface-Marketing Information System (MIS).

UNIT – XIV: Franchisee - Significance and importance of Franchisee in Channel Decision - Advantages of Franchisee - Process of appointment of Franchisee – Relationship between Franchiser and Franchisee.

REFERENCE BOOKS:

1. Kulkarni M. V., 2011, Physical Distribution Management, (3rd Edition), Vikas Publishing.
2. Gibson G. Vedamani, 2003, Retail Management, (4th Edition), JBA Publishers.
3. Ronald W. 1996, Retail Marketing Hasty, McGraw-Hill Publication.
4. Eliton S .2009, Sales and Distribution Management, (3rd Edition), Himalaya Publishing House Private Limited.

M.Com –(Finance & Control)

Sl No	Course Code	Title of the Course	CIA Max	ESE Max	TOTC Max	Ma x.
FIRST YEAR						
I Semester						
1	33511	Management Concepts	25	75	100	4
2	33512	Business Law	25	75	100	4
3	33513	Advanced Accounting	25	75	100	4
4	33514	Business Environment	25	75	100	4
		Total	100	300	400	16
II Semester						
5	33521	Operations Research	25	75	100	4
6	33522	Organizational Behaviour	25	75	100	4
7	33523	Advanced Cost Accounting	25	75	100	4
8	33524	Financial Services	25	75	100	4
		Total	100	300	400	16
SECOND YEAR						
III Semester						
9	33531	Investment Analysis and Portfolio Management	25	75	100	4
10	33532	Financial Management	25	75	100	4
11	33533	Principles of Personnel Management	25	75	100	4
12	33534	Corporate Accounting	25	75	100	4
		Total	100	300	400	16
IV Semester						
13	33541	Management Accounting	25	75	100	4
14	33542	E-Commerce	25	75	100	4
15	33543	Research Methodology	25	75	100	4
16	33544	Banking and Insurance	25	75	100	4
		Total	100	300	400	16
Grand Total			400	1200	1600	64

M.Com (Finance and Control)

FIRST SEMESTER

Course Code	Title of the Course
33511	Management Concepts

Learning objectives:

1. To make the students to understand the elements of effective management
2. To familiarize the students with the basics principles of management

BLOCK I: FUNCTIONAL AREA OF MANAGEMENT

UNIT – I: Management: Definition – Nature – Scope and functions – Evolution of management thought – Relevance of management to different types of organisation like, Insurance, Hospitals, Universities, Hotels, Social Service organisations etc.

UNIT – II: Planning: Nature, importance and strategic considerations in planning – Planning premises – Components of planning as objectives - Planning process – Methods of planning – Limitations of planning – Planning premises.

Unit – III: Policies, strategies, procedures, methods, rules, projects and budgets – Decision making – Meaning – Importance – Types – Process – Elements – Principles of decision making.

UNIT – IV: Organising: Nature, purpose and kinds of organisation – Structure – Principles and theories of organization – Formal organization – Informal organization.

Unit – V: Departmentation – Process of departmentation – Departmentation by functions an of control – Line and staff functions – Authority and responsibility – Centralisation and decentralization.

BLOCK II: PERSONAL AREA OF MANAGEMENT

Unit – VI: Delegation - Importance of delegation – Types of delegation – Problems of delegation – Effective delegation.

UNIT - VII: Staffing – Elements of staffing – Functions of staffing - General principles and importance – Motivation: Meaning – Importance – Types – Theories.

UNIT – IX: Communication: Meaning – Types – Process – Barriers – Overcoming barriers – Leadership: Meaning – Styles – Essential qualities.

UNIT – X: Controlling: Objectives and process of control – Devices of control – Integrated control – Special control techniques – Coordination – Need and techniques.

UNIT – XI: Directing – Principles of direction – Techniques of direction – Importance of direction – Characteristics of direction – Supervision – Functions of supervisor – Qualities of supervisor – Principles of supervisor.

BLOCK III: GUIDING AREA OF MANAGEMENT

UNIT – XII: Management Audit – Definition – Objectives – Scope of management audit – Need for management audit – Advantages of management audit.

UNIT – XIII: Business Ethics – Meaning – Need for business ethics – Principles of business ethics – Factors affecting business ethics – Management information system – Objectives of MIS – Importance of MIS – Process of MIS – Causes for poor MIS.

UNIT – XIV: Recent trends and new perspectives in management - Strategic alliances – Core competence – Business process reengineering – Total quality management – Bench marking.

REFERENCE BOOKS:

1. Ramaswamy. T, 2012, Principles of Management [Eighth Edition] Himalaya Publishing Home Pvt Ltd, Mumbai.
2. Dinkar Pagare, 2011, Business Management [Fifth Edition] Sultan Chand & Sons, New Delhi.
3. Govindarajan. M, 2008, Principles of Management [First Edition] PHI, New Delhi.
4. Prasad L.M, 2015, Principles and Practice of Management [Eight Edition], Sultan Chand & Sons, New Delhi.

Course Code	Title of the Course
33512	Business Law

Learning objectives:

1. To enable students to read, interpret and understand laws relevant to business made by Parliament, and decisions by the courts on the application of those laws.
2. To equip students with the tools to recognize the legal implications of business activities.
3. To emphasize the important areas of contract law, company and partnership law.

BLOCK I: ELEMENTS OF CONTRACT

UNIT – I: Contract Act – Evolution – Need for Law – Mercantile Law – Principles of equity – Law merchant – Precedents – Indian Statute Law – Kinds contracts – Elements of valid contract – Classification of contracts.

UNIT - II: Offer and acceptance – Essentials for a valid offer – Acceptance – Essentials for a valid acceptance – Communication of offer and acceptance – Revocation of offer and acceptance.

UNIT – III: Consideration – Essentials for a valid consideration – Stranger to consideration and stranger to contract – Contractual capacity – Persons not competent to contract – Minor – Law relating to minor – Persons of unsound mind.

UNIT – IV: Free consent – Coercion – Effect of coercion – Duress – Duress Vs coercion – Undue influence – Fraud – Silence as a fraud – Consequences of fraud – Mistake – Classification – Mistake of law – Mistake of foreign law.

BLOCK II : PERFORMANCE OF CONTRACT

UNIT – V: Void agreement – Void contract – Uncertain agreement – Reciprocal promises – Contingent contract – Performance of contract – Actual performance – Attempted performance – Performance o joint promises.

UNIT – VI: Quasi contract – Basis – Types – Claims – Payment by an interested person – Discharge of contracts – Modes of discharges of a contract – Remedies of breach of contract – Suit for damages – Rules for damages.

UNIT – VII: Contract of bailment and pledge – Kinds of bailment – Consideration – Duties of bailer – Rights of bailer – Particular lien – General lien – Termination of lien.

UNIT – VIII: Contract of sale of goods Act – Scope – Goods – Classification – Contract of sale – Sale and agreement to sell – Conditions and warranties –

Implied condition – Implied warranty – Caveat emptor.

BLOCK III : PARTNERSHIP

UNIT – IX: Nature of partnership – Essential elements of partnership – Duties of partnership – Partnership Vs Joint Hindu family – Partnership Vs Company – Formation of firm – Types of partnership.

UNIT – X: Dissolution of a firm – Mode of dissolution – Consequences of dissolution – Rights of partners – Liabilities of partners – Mode of settlement of accounts – Sale of goodwill.

UNIT – XI: Nature of negotiable instruments – Promissory note – Bill of exchange – Cheque – Crossing of cheque – Types of crossing – Parties of negotiable instruments – Capacity of parties – Minor – Unsound persons – Insolvent – Corporation – Agent – Partners – Hindu joint family.

UNIT – XII: Carriage of goods Act – Carriage by land – Common carrier – Duties – Rights and liabilities – Private carrier – Goods – Railway as carrier – Duties and liabilities.

UNIT – XIII: Law of insolvency – Object – Procedure – Act of insolvency – Insolvency Court – Secured creditors – Procedure on admission of petition – Dismissal of petition.

UNIT – XIV: Property and debts of insolvent – Official assignee – Official receiver – Powers and duties – Committee of inspection – Debts of inspection – Rights of secured creditors.

REFERENCES:

1. Kapoor N. D., 2007, Business Law, - Sultan Chand Co & Ltd, New Delhi.
2. Pillai S. N. & Bhagavathy, 2009, Business Law - Sultan Chand Co & Ltd, New Delhi.
3. Saravanavel P. & Syed Bandre, 2007, Business Law, Himalayan Publishing House, Chennai.
4. Kapoor N. D., 2008, Elements of Mercantile Law, Sultan Chand Co & Ltd, New Delhi.

Course Code	Title of the Course
33513	Advanced Accounting

Learning Objectives:

1. To make the students to understand the basic concepts of accounting applied in the competitive corporate world.
2. To understand accounting software easily.

BLOCK I: BASIC ACCOUNTING CONCEPTS

UNIT – I: Accounting – Definition – Rules – Advantages and Limitations of Accounting – Accounting Concepts and Conventions - Accounting Systems: Cash and mercantile systems – Accounting concepts – Principles – Accounting standards.

UNIT – II: Fundamentals of Book Keeping – Journal – Ledger – Subsidiary books – Cash book - Trial balance.

UNIT – III: Single Entry System: Calculation of profit – Statement of Affairs method – Conversion of single entry into double entry system.

UNIT – IV: Preparation of profit and loss account and balance sheet under single entry system.

UNIT – V: Final Accounts of a Sole Trader – Trading Account, Profit and Loss Account and Balance sheet with adjustments – Differences between Trial Balance and Balance sheet– Errors and their rectification–Types of errors.

BLOCK II: FINANCIAL ACCOUNTING

UNIT – VI: Bills of Exchange: Promissory notes and bills of exchange – Recording of transactions relating to bills – Books of Drawer and Acceptor – Honour and dishonor of bills –Renewal of bills – Retiring of bills under rebate.

UNIT – VII: Account Current and Average Due Date – Meaning – Advantages – Calculation of Account Current and Average Due Date.

UNIT – VIII: Bank Reconciliation Statement –Need –Reasons for difference between cash book and pass book balances – Preparation of Bank Reconciliation Statement.

UNIT – IX: Non Trading Accounts - Receipts and Payments and income and expenditure account and Balance sheet– Difference between Receipts and Payments and income and expenditure account.

UNIT – X: Depreciation – Meaning – Causes – objects of providing for depreciation – Factors affecting depreciation – Accounting Treatment – Methods of providing depreciation – Straight line method – Diminishing Balance Method – Change in method of Depreciation – Sinking fund method.

BLOCK III: TYPES (OR) BRANCHES OF ACCOUNTING

UNIT – XI: Accounting for consignments - Consigner's book – Consignee's book – Accounting for joint ventures - Joint ventures account – co venture's account – Joint bank account.

UNIT – XII: Investment accounts – Ex-interest – Cum-interest Types of securities – Fixed interest securities – Variable income securities – Royalty excluding Sublease - Methods of recoupment - Fixed recoupment of short workings – Flexible recoupment.

UNIT – XIII: Departmental accounts – Apportionment of common expenses – Ascertaining cost of departmental purchases Inter departmental transfers at cost or selling price – Branch – Dependent branches – Independent branches - excluding foreign branches.

UNIT – XIV: Hire purchase - Calculation of interest - installment systems - Default and Repossession including Hire Purchasing Trading account - Goods on sale or Return.

REFERENCE BOOKS:

1. Reddy, T. S. and Murthy, A. 2014, Financial Accounting [Sixth Edition], Margham Publications, Chennai.
2. Nagarajan, K. L., Vinayaka, N., and Mani P.L. 2013, Principles of Accountancy [First Edition], Sultan Chand & Company Ltd, New Delhi.
3. Jain, S. P., and Narang, K. 2005, Financial Accounting. [Fifth Edition], Kalyani Publishers, Ludhiana.
4. Grewal T.S. 2007, Introduction to Accountancy [Fifth Edition], Sultan Chand & Company Ltd, New Delhi.

Course Code	Title of the Course
33514	Business Environment

Learning Objectives:

1. To enhance the knowledge of business opportunities in current situation.
2. To enhance the capacity to making business polices.

BLOCK I: BUSINESS ENVIRONMENT

UNIT – I: Concept of Business Environment- Significance - Types of Environment- External and Internal – Inter-Relationship between economic and non-economic environment.

UNIT – II: Impact of environment on business and Strategic Decisions - Culture and business - Social Responsibilities of Business.

UNIT – III: Economic Systems – Meaning – Characteristics -Types of economic systems-Capitalism-Socialism-Mixed economy.

UNIT – IV: Economic planning - Nature, Scope and Significance of Economic Planning in India - Achievements and Failures of Economic Planning.

BLOCK II: INDUSTRIAL ENVIRONMENT

UNIT – V: Industrial Policies and Regulations - Industrial Policy upto 1991, 2014 - Public, Private, Joint and Co-operative Sectors.

UNIT – VI: Privatization and Disinvestment - Ways of Privatization - Benefits and Arguments against Privatization - Privatization in India.

UNIT – VII: Technological environment-Factors Governing Technological Environment- Management of technology - Patents and Trademarks.

UNIT – VIII: Indian Contract Act 1872 – Indian Companies Act 1956 – Consumer Protection Act 1986 – Consumer Rights – World Trade Organization (WTO).

UNIT – IX: Industrial Finance – Short term finance – medium term finance - long term finance – Corporate securities.

BLOCK III: INTERNATIONAL ENVIRONMENT

UNIT – X: Reserve Bank of India - Financial Institution in India – IFCI – ICICI – IDBI – IIBI – SIDBI – LIC – SIDCO – Commercial Banks – DFHI - SFCs.

UNIT – XI: Globalization - Meaning and Dimensions - Features of Current Globalization - Essential Conditions for Globalization - Globalization of Indian business.

UNIT – XII: Foreign Direct Investment - Concept, Advantages and Disadvantages and Determinants - India's policy towards FDI - Multinational

Corporation – Meaning - Merits and Demerits - Control over MNCs - MNCs in India.

UNIT – XIII: International Environment – Meaning and concept – World Bank – International Monetary Fund (IMF) – The General Agreement on Tariffs and Trade (GATT) – The World Trade Organization.

UNIT – XIV: Current Issues in Business Environment – Urbanization – Population – Public distribution system – Natural environment – Various aspects of the natural environment – Pollution – Environmental management.

REFERENCE BOOKS:

1. Francis Cherunilam, 2000, Business Environment, Himalaya Publishers.
2. Gupta. C. B., 2014, Business environment, (8th Edition), McGraw Hill Education India Private Limited.
3. Avadhani.V. A., 2004, Essentials of Business Environment, (2nd Edition), Himalaya Publication, Mumbai.
4. Shaikh Saleem, 2009, Business Environment, (2nd Edition), Dorling Kindersley (India) Private Limited.

SECOND SEMESTER

Course Code	Title of the Course
33521	Operations Research

Learning Objectives:

1. The objective of the course is to acquaint the student with the application of operations research to business and industry and help them to grasp the significance of analytical techniques in decision making.

BLOCK I: OPERATIONS RESEARCH AND LINEAR PROGRAMMING PROBLEM CONCEPT

UNIT – I: Operations Research: Historical Background, Scope of Operations Research, Features of Operations Research, Phases of Operations Research, Types of Operations Research Models, Operations Research Techniques and Tools, Structure of the Mathematical Model, Limitations of Operations Research.

UNIT – II: Linear Programming: Linear Programming Problem, Requirements of LPP, Mathematical Formulation of LPP, Case Studies of LPP, Graphical Methods to Solve Linear Programming Problems, Applications, Advantages, Limitations.

UNIT – III: Graphical Analysis of Linear Programming Problems: Graphical Analysis, Some Basic Definitions, Graphical Methods to Solve LPP, Some Exceptional Cases, Important Geometric Properties of LPP.

UNIT – IV: Simplex Method: Standard Form of LPP, Fundamental theorem of LPP, Solution of LPP – Simplex Method, The Simplex Algorithm, Penalty Cost Method or Big M-method, Two Phase Method, Solved Problems on Minimisation.

UNIT – V: Duality in Linear Programming Problem: Importance of Duality Concepts, Formulation of Dual Problem, Economic Interpretation of Duality, Sensitivity Analysis.

UNIT – VI: Transportation Problem: Formulation of Transportation Problem (TP), Transportation Algorithm (MODI Method), the Initial Basic Feasible Solution, Moving Towards Optimality.

UNIT – VII: Assignment Problem: Mathematical Formulation of the Problem, Hungarian Method Algorithm, Routing Problem, Travelling Salesman Problem.

BLOCK II: INTEGER PROGRAMMING AND QUEUING CONCEPTS

UNIT – VIII: Integer Programming Problem: Types of Integer Programming Problems, Gomory's All-IPP Method, All IPP Algorithm, Branch and Bound Technique.

UNIT – IX: Infinite Queuing Models: Queuing Theory, Operating Characteristics of a Queuing System, Constituents of a Queuing System, Service Facility, Queue Discipline.

UNIT – X: Mathematical Analysis of Queuing Theory: Mathematical Analysis of Queuing Process, Properties of Queuing System, Notations, Service System, Single Channel Models, Multiple Service Channels, Erlang Family of Distribution of Service Times, Applications of Queuing Theory, Limitations of Queuing Theory.

UNIT – XI: Finite Queuing Models: Finite Queuing Models - Simulation: Methodology of Simulation, Basic Concepts, Simulation Procedure, Application of Simulation.

BLOCK III: SIMULATION GAME THEORY CONCEPTS

UNIT – XII: Simulation Monte-Carlo Method: Monte-Carlo Simulation, Applications of Simulation, Advantages of Simulation, Limitations of Simulation.

UNIT – XIII: Project Scheduling and PERT - CPM: Basic Difference between PERT and CPM, PERT / CPM Network Components and Precedence Relationship, Project Management – PERT

UNIT – XIV: Game Theory: Competitive Situations, Characteristics of Competitive Games, Maximin – Minimax Principle, Dominance.

REFERENCE BOOKS:

1. Havinal Veerabhadrapa (2012), "An Introduction to Operations Research", New Age International Private Limited, New Delhi.
2. Gurusamy S, (2015), "Operations Research", Vijay Nicole Imprints Private Limited, Chennai.
3. Sharma J. K, (2016), "Operations Research – Theory and Applications", Laxmi Publications, New Delhi.

Course Code	Title of the Course
33522	Organizational Behaviour

Learning Objectives:

1. To grasp the organizational theories that would enlighten the understanding of human behaviour at work.
2. To understand team and group process and to be able to address issues arising from individual and collective organizational behaviour behavior.

BLOCK I: ELEMENTS OF BEHAVIOUR

UNIT – I: Organizational behaviour – Characteristics of human behaviour - Meaning – Definition – Nature of organizational behaviour – Basic objectives of organizational behaviour – Key elements of organizational behaviour – Importance of organizational behaviour.

UNIT – II: Foundations of Individual behaviour – Positive individual behaviour – Negative individual behaviour – Factors influencing individual behaviour – Personal factors – Environmental factors – Behavioural models.

UNIT – III: Personality – Definitions – Determinants of personality – Influence of personality on behaviour – Personality traits – Influencing behaviour – Personality development – Personality theories.

UNIT – IV: Perception – Definitions – Sensation and perception – Process of perception – Determinants of perception – Qualities of perceiver - Learning – Meaning and definition – Nature and characteristics of learning – Theories of learning.

UNIT – V: Attitude and Values – Definitions – Nature and characteristics of attitude and values – Measurement of attitude – Functions of attitude – Attitude change – Values and attitudes – Types of values – Formation of values.

BLOCK II: ORGANIZATIONAL DEVELOPMENT

UNIT – VI: Groups in organization – Meaning – Characteristics – Reasons for formation of groups – Types of groups – Different stages of groups – Group norms – Group cohesiveness – Decision making and the group – Individual and

group decisions.

UNIT – VII: Work Stress – Stress and counselling – Causes of stress – Personal factors – Organizational factors – Stress-performance relationship – Psychological problems – Behavioural changes – Escaping stress – Coping with stress – Counselling.

UNIT – VIII: Organizational change – Meaning – Factors influencing change – internal factors – External factors – Resistance to change – Possible benefits of resistance – Organizational development – Objectives of OD – Evaluation and follow up – Organizational development – Merits and Demerits.

UNIT – IX: Organizational Culture and Climate – Types – Determinants – Changing organizational culture – Organizational climate – Determinants of organizational culture

– Impact of organizational climate – Measures.

UNIT – X: Organizational Conflicts – Definitions – Causes of conflicts – Different stages of conflict – Conflict and performance – Measures to stimulate conflicts – Conflict outcomes.

BLOCK III: ORGANIZATIONAL PROCESS

UNIT – XI: Career planning – Meaning and characteristics – Need for career planning – Process of career planning – Preparing and implementing action – plans – Evaluation of career planning Limitations.

UNIT – XII: Emotional Intelligence – Emotions – Types of emotions – Managing emotions – Emotional intelligence – Dimensions of emotional intelligence – Advantages and limitations of emotional intelligence.

UNIT – XIII: Power, Politics and Impression management – Power, authority and influence – Sources – Organizational politics – Nature of organizational politics – How to overcome negative impact of organizational conflicts.

UNIT – XIV: Communication and knowledge management – Meaning of communication – Functions – Communication process – Directions of communication – Types of communication – Knowledge management – Dimensions of knowledge management – Knowledge management processes.

REFERENCES:

1. Khanka S. S, “Organisational Behaviour” Sultan Chand & Sons Publications, New Delhi (2012).
2. Aswathappa K, “Organisational Behaviour”, Himalaya Publications, New Delhi (2011).
3. Varma, “Organisational Behaviour”, Forward Book Depot, New Delhi (2013).
4. Sharma, “Organisational Behaviour”, Tata McGrew-Hill Publications, New Delhi (2012).

Course Code	Title of the Course
33523	Advanced Cost Accounting

Learning Objectives:

1. To enable the students to understand the Costing Terms in business.
2. To provide adequate knowledge on Cost Accounting Practice

BLOCK I: COST ACCOUNTING AND COST CONTROL

UNIT – I: Cost Accounting Principles: Meaning of cost and cost accounting – Objectives of cost accounting – Installation of a costing system.

UNIT – II: Elements of cost – Cost concepts – Cost classifications – Methods, systems and techniques of costing – Cost sheet.

UNIT – III: Cost Accounting for material cost control – Need for material cost control – Purchase control – Stores control – Stock levels – EOQ analysis.

UNIT – IV: Pricing of stores issues – Perpetual inventory control – ABC analysis – VED analysis – Treatment of waste, scrap, defectives and spoilage.

UNIT – V: Labour Cost Control – Time keeping and time booking – Treatment of idle time and overtime cost – Wage rates for costing – Systems of wage payment – Time wage and piece rate – Incentive schemes of wage payment – Labour turnover.

UNIT – VI: Overhead Cost Control – Classification of overheads – Allocation and appointment – Absorption of overheads – Different methods – Treatment of under absorption and over absorption of overheads.

BLOCK II: TYPES OF COSTING

UNIT – VII: Methods of Costing – Job costing – Contract costing – Profit on incomplete contracts – Cost plus contracts – Target costing – Escalation clause.

UNIT – VIII: Unit costing – Meaning – Cost accumulation – Procedure in unit costing – Preparation of cost sheet.

UNIT – IX: Process Costing – Features – Job costing Vs Process costing – Process cost accounts – Inter-process profits – Accounting for joint products and by products.

UNIT – X: Contract costing – Types – Procedure for contract costing – Contract plus costing – Profit from incomplete contract.

UNIT – XI: Operating Costing – Meaning – Features – Objectives – Cost Unit – Transport costing – Operating cost sheet.

UNIT – XII: Batch costing – Definition – Economic batch quantity – Applicability of batch costing.

UNIT - XIII: Standard Costing – Definition –Advantages and limitations of standard costing – Variance analysis.

BLOCK III: RECONCILIATION OF COST AND FINAL ACCOUNT

UNIT – XIV: Reconciliation of cost and final accounts – Cost control and cost reduction – Meaning – Tools and techniques – Essentials for success of cost control and cost reduction – Distinction between cost control and cost reduction – Areas of cost reduction and control – Advantages.

REFERENCE BOOKS:

1. Jain, S. P., and Narang, K. L. 2001, Cost and Management Accounting [Fifth Edition], Kalyani Publishers, New Delhi.
2. Pillai, R. S. N., and Bagavathi, 2009, Cost Accounting [First Edition], Sultan Chand Company Ltd., NewDelhi.
3. Sharma, and Shashi K. Gupta, 2012, Management Accounting [Twelfth Edition], Kalyani Publishers, New Delhi.
4. Jain, S. P., and Narang, K. L. 2010, Cost Accounting [Twenty First Edition], Kalyani Publishers, New Delhi.
5. Maheswari, S. N. 2003, Cost and Management Accounting [First Edition], Sultan Chand Company Ltd., New Delhi.

Course Code	Title of the Course
33524	Financial Services

Learning Objectives:

1. On successful completion of this course, the student should know about the methods of financing by the agencies and the key role Played by them in Corporate Financing.
2. Understand the tradeoff between risk and reward in investing.

BLOCK I: PRIMARY AND SECONDARY MARKET

UNIT – I: Nature and various facets of financial service industry – Analysis of financial services – Need for financial innovation.

UNIT – II: Money Market in India – Indian Capital Markets – Difference between Money Market and Capital Market – Classification and object of Indian Money Markets and Structure of Capital Markets.

UNIT – III: Financial services and market environment – Development of financial markets – Global integration of financial market – Finance Companies: Functions, strengths and weaknesses.

UNIT – IV: Secondary Markets – Stock Exchange – Role of Secondary Market – Trading in Stock Exchange – Various Speculative Transactions – Role of SEBI – Regulation of Stock Exchange.

UNIT – V: Banks as Financial Intermediaries – Commercial Bank s Role in Financing – IDBI – IFCI– LIC – GIC – UTI – Investments Companies.

BLOCK II: FINANCIAL INSTITUTIONS

UNIT – VI: Markets for Corporate Securities – New Issue Markets – Functions Issue Mechanism – Under writing.

UNIT – VII: Commercial Banking and their fund based and non-fund based financial services – Leasing – Steps in leasing transactions – Lease finance – Accounting and reporting for lease.

UNIT – VIII: Hire purchase financing: Salient features, guidelines, functions – Components of hire purchase contract – Hire purchase agreement – Cost of hire purchase.

UNIT – IX: Mutual Funds: Types of mutual funds – Floatation – Asset management company of mutual funds – Regulations.

BLOCK III: BILL MARKET

UNIT – X: Factoring – Forfeiting – Securitization – Venture capital – Consumer finance and credit cards: Salient features, guidelines, functions – Strategies involved in financing.

UNIT - XI: Merchant Banking including public issue management – Underwriting – Portfolio management – Stock and security broking – Merger and Takeover: Salient features – Guidelines – Functions.

UNIT - XII: Foreign Exchange Broking – Bills discounting – Financial consultancy – Corporate advisory services – Credit rating services – Salient features – Guidelines – Functions.

UNIT – XIII: Housing Finance – Advantages – Method of housing finance – Role of NHB – Borrowing powers of national housing bank – Export finance – Need for export finance – Different types of export finance.

UNIT - XIV: Non-banking Financial Companies: Regulations of RBI – Role of NBFCs – Chit funds – Functions of chit fund companies – Finance companies.

REFERENCE BOOKS:

1. Gordon E, and Natarajan K, 2009, “Financial Markets and Services”, Himalaya Publishing House Pvt. Ltd., India.
2. Guruswamy S, 2009, “Financial Services”, Tata McGraw-hill Education, New Delhi.
3. Prasanna Chandra, 2011 “Financial Management Theory and Practice”, Tata Mc Graw-Hill Education, New Delhi.
4. Khan M Y and Jain P K, 2008, “Financial Management Text, Problems and Cases”, Tata McGraw-Hill Education, New Delhi.
5. Banerjee G and Banerjee S. Borrowing from Financial Institutions, UDH Publishing House, New Delhi.
6. Bhole .L. M, “Financial Institutions’ and Markets: Structure Growth and Innovations”, Tata McGraw-Hill Publishing Co Ltd.

THIRD SEMESTER

Course Code	Title of the Course
33531	Investment Analysis and Portfolio Management

Learning Objectives:

1. To understand the characteristics of securities markets and the instruments traded therein.
2. To be able to analyze the risk, return of securities and to manage portfolios of investments.

BLOCK I: INVESTMENT AVENUES

UNIT – I: Investment: Concepts and goals – Types of investment: Financial, Real, Business, Personal and Institutional – Comparison of investments, speculation, gambling and hedging – Concept of portfolio management: Goals – Risk and return trade-off.

UNIT – II: Financial Investment Avenues: Fixed income and Varying income securities
- Factors influencing Investment – Investment media – Features of investment Programme – Investment Process – Development of Financial system in India.

UNIT - III: Investment Analysis - Aspects of analysis – Return Analysis: Concepts, measures and computation of return of individual security and portfolio.

UNIT – IV: Capital Market – New issue Market and Stock Exchange in India – BSE - NSE – OTCEI – Kinds of Trading activity – Listing of Securities – SEBI and its Role and guidelines.

UNIT – V: Risk Analysis: Concepts, types, measure, computation of risk of individual security and portfolio – Valuation Analysis: Share and bond valuation – Price Earnings Analysis.

BLOCK II: FUNDAMENTAL AND TECHNICAL ANALYSIS AND DERIVATIVES

UNIT – VI: Investment Alternatives – Investment in Equity Shares, Preference shares, Bonds, Government Securities.

UNIT – VII: Mutual Funds – Real Estate – Gold – Silver – Provident fund – Unit Trust – National Savings Scheme – LIC.

UNIT – VIII: Approaches to Investment Analysis - Fundamental Analysis - Concept and components – Tools of economy, industry and company analysis.

UNIT – IX: Technical Analysis - Concept and tools – Assumption – Theories -

Dow theory – Contrary opinion – Confidence index, Breadth of market and Relative strength analysis – Moving average analysis – Chart patterns.

UNIT – X: Options and Futures – Types of options – Call option – Advantages of options – Limitations – Valuation of options – Characteristics of options – Future – Forwards and futures – Differences between futures and options.

BLOCK III: PORTFOLIO CONSTRUCTION AND PERFORMANCE MEASURES

UNIT – XI: Portfolio Construction and Choice - Markowitz diversification – Efficient frontier – Risk-return indifferent curves – Portfolio choice – Single and two factorial models – Lagrange multiplier method.

UNIT – XII: Portfolio Performance Measures: Sharpe, Treynor and Jensen – Portfolio Audit and Portfolio Revision: Need and methods – Formula plans.

UNIT – XIII: Capital Asset Pricing Model – Assumptions and application – Capital market line and security market line.

UNIT – XIV: Efficient market hypotheses – The weakly efficient, semi strongly efficient and strongly efficient market forms – Random-walk theory.

REFERENCE BOOKS:

1. Preeti Singh, 2008, Investment Management [Sixteenth Edition], Himalaya Publishing House Pvt. Ltd., Mumbai.
2. Bhalla, V.K. 2008, Investment Management, Security Analysis and Portfolio Management [Fourteenth Edition]. Sultan Chand & Company Ltd., New Delhi.
3. Avadhani, V.A. 2008, Investment Management [Seventh Edition], Himalaya Publishing House, Mumbai.
4. Gangadhar, V., and Ramesh Babu, G. 2003, Investment Management [First Edition], Anmol Publication Pvt. Ltd., New Delhi.

Course Code	Title of the Course
33532	Financial Management

Learning Objectives:

1. To reveal the knowledge on fund utilization and management.
2. To analyze the various concepts and techniques for better financial decision.

BLOCK I: FINANCIAL MANAGEMENT AND ITS SOURCES

UNIT – I: Financial Management: Concept, nature, evaluation and significance – Finance functions – Managerial and operative – Investment – Function, meaning and scope – Financing function – Meaning and scope – Dividend function.

UNIT – II: Goals of Financial Management – Types – Maximization of profit, profitability / wealth / liquidity / solvency – Minimization of risk, cost of capital, dilution of management control etc. – Risk – Return trade off – Maximization and minimization Vs optimization.

UNIT – III: Sources of finance – Long term sources – Short term sources – Sources of working capital – Equity shares – merits and demerits – Preference shares – merits and demerits – Debentures – Merits and demerits – Elements of financial system – Structure of Indian capital market.

UNIT – IV: Capitalization – Meaning – Need – Theories of capitalization – Over capitalization – Merits and demerits - Under capitalization – Merits and demerits.

BLOCK II: DETERMINATION OF RESOURCES

UNIT – V: Financial decisions – Relationship between Risk and Return – Sources of finance – Short-term and Long-term finance.

UNIT – VI: Long Term Capital Resources – Equity and debt sources – Equity share, preference shares and debentures as sources of long term capital – Relative merits, demerits and uses.

UNIT – VII: Significance of convertible issues and right issues – Borrowings from term lending institutions – The institutional framework – Types of assistance – Public deposits.

BLOCK III: CAPITAL MANAGEMENT

UNIT – VIII: Working Capital: Concept and types – Determinants – Financing approaches – Conservative – Aggressive and hedging approaches – Their risk – Return features and significance – Sources of working capital finance – Working capital financing by commercial banks.

UNIT – IX: Capital Planning – Determinants of capital structure – Optimum capital structure – Capital structure theories – Net income and net operative income theories – M.M. Theory – Traditional theory – Their assumptions – Significance and limitations.

UNIT – X: Cost of Capital Concept – Cost of debt, equity, preference share capital, retraining earning – Weighted average cost – Book weight, market weight – Marginal cost of capital use and computations.

UNIT – XI: Capital Budgeting: Concept – Significance – Methods of appraisal: Payback periods, ARR, IRR, NPV, Simulation and Certainty equivalent methods.

BLOCK IV: LEVERAGES AND INTERNATIONAL MANAGEMENT

UNIT - XII: Leasing: Concept – Types – Significance – General considerations – Economics of leasing – Evaluation – Present value and IRR methods – Leverage – Concept – Types – Degree of operative leverage – Financial leverage and total leverage – Implications of high and low degrees of leverages.

UNIT – XIII: Dividend Theories: Valuation under Gordon and Walter theories – Dividend irrelevance under M.M. Theory – Assumptions – Limitations – Dividend policy – Different policies and practices – Factors affecting dividend decision.

UNIT – XIV: International Financial Management – Meaning – FOREX Market operations – Export credit needs – India's export finance – Methods of international payments – Letter of credit – Kinds of letter of credit – Foreign currency finance Export documents.

REFERENCE BOOKS:

1. Sharma R.K and Shasi, K. Gupta. 2014, Financial Management, (4th Edition), Kalyani Publishers, New Delhi.
2. Pandey I.M. 2009, Financial Management, (10th Edition), Vikas Publishing House
3. Prasanna Chandra, 2012, Financial Management, (4th Edition), Tata McGraw-Hill Publishers.
4. Maheswari S.N. 2014, Financial Management, (26th Reprint) Vikas Publishing House Pvt. Ltd, New Delhi.

Course Code	Title of the Course
33533	Principles of Personnel Management

Learning Objectives:

1. To evaluate and apply theories of social science disciplines to workplace issues.
2. To enhance their effectiveness for optimizing the human resource potential of their organization in order to achieve business and strategic objectives.
3. To examine current issues, trends, practices, and processes in personnel management.

BLOCK I: HUMAN RESOURCE PLANNING

UNIT – I: Personnel Management – Definition – Objectives and functions – Role and structure of personal function in organizations – Personnel principles and policies – Managerial functions – Operative functions.

UNIT – II: Job Evaluation – Job Analysis – Job Design – Job Description – Job Specification – Methods of job evaluation – Ranking method – Advantages and disadvantages of job evaluation.

UNIT – III: Human Resource Planning: Characteristics – Need for planning – Human Resource Planning Process – Factors influencing human resource plan – Limitations of human resource planning – Forecasting the demand for HR.

UNIT – IV: Organising the human resource – Definitions – Process of organization – Importance of organization – Organization Structure – Principles of organization – Theories of organization.

UNIT – V: Recruitment - Selection Process - Placement and induction – Training and development – Need for training – Importance of training – Essentials of good training programme - Promotion – Demotions – Transfers – Separation.

BLOCK II: MEASURING AND MAINTAINING THE PERSONNEL

UNIT – VI: Performance appraisal – Meaning – Features of performance appraisal – Methods of performance appraisal - Human relations - approaches to good human relations – Punishment.

UNIT – VII: Wage and Salary Administration: Factors – Principles – Compensation plan – Individual –Group – Incentives – Bonus – Fringe benefits – Job evaluation systems – Wage and salary administration in relation to personal taxation.

UNIT – VIII: Motivation – Definition – Characteristics of motivation – Importance of motivation – Process of motivation – Types of motivation – Theories of motivation.

UNIT – IX: Leadership – Meaning – Need and characteristics of leadership – Importance of leadership – Qualities of a leader – Different kinds of leadership styles – Theories of leadership.

UNIT – X: Morale and job satisfaction – Meaning – Characteristics of morale – Morale and productivity – Measurement of morale – Determinants of job satisfaction – Personal factors – Organizational factors.

UNIT – XI: Absenteeism – Meaning – Causes of absenteeism – Measures to control absenteeism – Discipline and grievance – Objectives of discipline – Characteristics of grievance – Cause of grievance.

UNIT – XII: Employee maintenance and integration – Welfare and society – Accident prevention – Administration of discipline – Employee motivation – Need and measures.

BLOCK III: INDUSTRIAL RELATION

UNIT –XIII: Industrial relations - Trade unionism - Collective bargaining and worker's participation in management – Quality of work life.

UNIT – XIV: Personnel Records / Reports: Personnel Research and Personnel Audit: Objectives – Scope and importance.

REFERENCE BOOKS:

1. Tripathi P.C., 2013, Personnel Management and Industrial Relations, Sultan Chand and Sons, New Delhi.
2. Aswathappa K., 2013, Human Resource Management: Text and Cases, McGraw Hill Education, New Delhi.
3. Memoria C. B. & Rao V. S. P., 2014, Personnel Management - Text & Cases, Himalaya Publishing house, New Delhi.
4. Khanka S. S., 2007, Human Resource Management - Text & Cases, S. Chand & Company Ltd., New Delhi.

Course Code	Title of the Course
33534	Corporate Accounting

Learning Objectives:

1. To give a clear understanding and knowledge to the students in the area of corporate accounting and other related matters.
2. To provide the knowledge based on corporate need to have a global perspective and grow accordingly.

BLOCK I: COMPANY ACCOUNTS

UNIT – I: Issue of shares: Par, Premium and Discount - Forfeiture - Reissue - Surrender of Shares - Right Issue – Underwriting.

UNIT – II: Redemption of Preference Shares – Provisions of the companies Act - Debentures - Issue – Treatment of different items relating to debenture in final accounts – Redemption – Methods of redemption of Debenture - Sinking Fund Method – Insurance Policy method.

UNIT – III: Final Accounts of Companies – Trading Account – Profit and Loss Account – Profit and Loss Appropriation Accounts – Balance sheet - Managerial Remuneration – Remuneration payable to different categories of managerial personnel – Calculation of Managerial remuneration.

UNIT – IV: Valuation of Goodwill - Need - Methods of valuation of Goodwill - Average Profit method – super profit method – capitalization method.

UNIT – V: Shares - Methods of valuation of Shares – Net asset method – Yield Method – Fair value Method.

UNIT – VI: Liquidation of Companies –Modes of Winding up - Statement of Affairs - Deficiency account or Surplus Account.

UNIT – VII: Company Final accounts – Schedule VI Part I and Part II – Profit prior to incorporation - Managerial remuneration – Preparation of profit and loss account and Balance Sheet.

BLOCK II: ALTERATION OF CAPITAL

UNIT – VIII: Amalgamation – Meaning – Advantages – Purchase consideration – Types of amalgamation – Net present value method - Absorption (Excluding inter – company holdings).

UNIT – IX: External reconstruction and Internal reconstruction – Meaning – Accounting treatment – Alteration of share capital – Capital reduction account.

UNIT – X: Holding company accounts excluding inter-company holdings – Mutual Owings, Contingent Liability, Unrealized Profit, Revaluation of Assets.

UNIT – XI: Liquidation of companies – Meaning – Reasons for winding up – Liquidator – Preferential creditors – Calculation of liquidator’s remunerations – Liquidator’s final statement of accounts.

BLOCK III: BANKING COMPANY

UNIT – XII: Accounts for banking companies - Preparation of profit and loss account and balance sheet - Accounts for Insurance Companies - Preparation of profit and loss account and balance sheet.

BLOCK:IV FINANCIAL REPORTING STANDARD

UNIT – XIII: International Financial Reporting Standards (IFRS) – Meaning – Advantages - Disadvantages.

BLOCK IV: HUMAN RESOURCE ACCOUNTING

UNIT – XIV: Human resource accounting - Characteristic, Applications methods - Principles of Government accounting – Principles of Responsibility accounting.

REFERENCE BOOKS:

1. Dr. M. A. Arulanandam, and Dr. K. S. Raman, 2003, “Advanced Accountancy, Part-I” - Himalaya Publications, New Delhi.
2. Jain S. P. & Narang K. L., 2004 - “Advanced Accounting” - Kalyani Publishers, New Delhi.
3. Gupta R. L. & Radhaswamy M., 2006, “Corporate Accounts” – Theory, Method and Application, Sultan Chand & Co., New Delhi.
4. Reddy & Murthy, 2004, “Financial Accounting” - Margham Publicatuions, Chennai.
5. Jain S. P and Narang K. L. 2004, Corporate Accounting, (First Edition) Kalyani Publications, Chennai.
6. Joseph. T. 2009, Corporate Accounting, Vol. 1, (1st Edition), Tata McGraw-Hill Education Pvt. Limited, New Delhi.

FOURTH SEMESTER

Course Code	Title of the Course
33541	Management Accounting

Learning Objectives:

1. To enable the students to understand the conceptual framework of Management Accounting.
2. To acquaint the students with the Management Accounting Techniques that facilitates managerial decision making.

BLOCK I: MANAGEMENT ACCOUNTING CONCEPTS

UNIT – I: Management Accounting: Definition – Scope – Objectives – Functions – Role Importance – Limitations – Management accounts Vs Financial accounting – Management and Cost accounting.

UNIT – II: Installation of management accounting system – Tools of management accounting – Reporting.

BLOCK II: FINANCIAL ANALYSIS

UNIT - III: Financial Statement Analysis: Financial Statements – Nature and limitations of financial statements – Analysis and Interpretation.

UNIT – IV: Comparative statements – Common size statements – Criticism of published accounts and cost accounting.

UNIT - V: Ratio Analysis – Significance and uses – Important managerial uses of ratio analysis.

UNIT – VI: Types of ratios – Profitability ratios – Turnover ratios – Liquidity ratios – Proprietary ratios – Market earnings ratios – Factors affecting efficiency of ratios.

UNIT – VII: Ratio analysis – Uses and limitations – Construction of profit and loss account and balance sheet with ratios and relevant figures.

UNIT - VIII: Funds Flow Analysis - Need and meaning – Preparation of schedule of change in working capital and the fund flow statement – Projected fund flow statement – Managerial uses and limitations of fund flow analysis

UNIT – IX: Cash Flow Analysis - Need – Meaning – Preparation of cash flow statement – Managerial uses of cash flow statement – Limitations – Differences between fund flow and cash flow analysis.

BLOCK III: COST ANALYSIS

UNIT - X: Budgeting: Meaning of Budget and Budgetary Control – Importance – Limitations – Classification of budgets and budgets preparation – Cash budget – Sales budget – Production budget.

UNIT – XI: Materials purchase budget - Fixed and flexible budgeting – Performance budgeting – Master budget - Zero-base budgeting.

UNIT - XII: Marginal Costing and Break Even Analysis: Definition – Marginal costing Vs Absorption costing – Justification for marginal costing – Marginal cost sheet – Segregation of semi-variable costs – Contribution – Key factor.

UNIT – XIII: Managerial uses of marginal costing – Pricing decisions – Level of activity planning – Mix of sale – Profit planning techniques – Make or buy decisions.

UNIT – XIV: Break-even Analysis – Break-even meaning, chart and graph – P/V ratio – Margin of Safety – Assumptions of break – Even analysis – Limitations of break-even analysis – Advantages and limitations of marginal costing – Differential costing.

REFERENCE BOOKS:

1. Sharma., and Gupta, S.K. (2006), Management Accounting, Kalyani Publishers, New Delhi.
2. Reddy, T.S., and Hari Prasad Reddy, Y. (2010), Management Accounting, Margham publications. Chennai.
3. Maheswari, S.N. (2004), Management Accounting, Sultan Chand & Sons, New Delhi.
4. Jain, S.P., and Narang. K.L. (2001), Cost and Management Accounting, Kalyani Publishers, New Delhi.

Course Code	Title of the Course
33542	E-Commerce

Learning Objectives:

1. To enable the students to understand the technology of E-Commerce for Business Application.
2. To enable awareness on the Application of E-Commerce.

BLOCK I: E-COMMERCE CONCEPTS AND INTERNET BASED WORKINGS

UNIT - I: E-Commerce: Defining Commerce; Main Activities of Electronic Commerce; Benefits of E-Commerce; Broad Goals of Electronic Commerce; Main Components of E-Commerce; Functions of Electronic Commerce – Communication, Process Management, Service Management, Transaction Capabilities; Process of E-Commerce; Types of E-Commerce; Role of Internet and Web in E-Commerce; Technologies Used; E-Commerce Systems; Prerequisites of E-Commerce; Scope of E-Commerce; E-Business Models.

UNIT - II: E-Commerce Activities: Various Activities of E-Commerce; Various Modes of Operation Associated with E-Commerce; Matrix of E-Commerce Types; Elements and Resources Impacting E-Commerce and Changes; Types of E-Commerce Providers and Vendors; Man Power Associated with E-Commerce Activities; Opportunity Development for E-Commerce Stages; Development of E-Commerce Business Case; Components and Factors for the Development of the Business Case; Steps to Design and Develop an E-Commerce Website.

UNIT - III: Internet – The Backbone for E-Commerce: Early Ages of Internet; Networking Categories; Characteristics of Internet; Components of Internet – Internet Services, Elements of Internet, Uniform Resource Locators, Internet Protocol; Shopping Cart, Cookies and E-Commerce; Web Site Communication; Strategic Capabilities of Internet.

UNIT – IV: ISP, WWW and Portals: Internet Service Provider (ISP); World Wide Web (WWW); Portals – Steps to build homepage, Metadata; Advantages of Portal; Enterprise Information Portal (EIP).

UNIT - V: Reference Models: Open Systems Interconnection (OSI) Model – Physical layer, Data link layer, Network layer, Transport layer, Session layer, Presentation layer, Application layer; Transmission Control Protocol (TCP) / Internet Protocol (IP) Model;
Protocol – Internet Protocol (IP), User Datagram Protocol (UDP), Transmission

Control Protocol (TCP), Dynamic Host Configuration Protocol (DHCP), Hyper Text Transfer Protocol (HTTP), File Transfer Protocol (FTP), Telnet, Post Office Protocol (POP), Simple Mail Transfer Protocol (SMTP).

BLOCK II: WORKINGS OF XML AND COMPUTER BASED E-PRODUCTS

UNIT - VI: XML and Data Warehousing: Definition of eXtensible Markup Language (XML); XML Development Goals; Comparison between HTML and XML; Business importance in using XML Based Technology; Advantages, Disadvantages and Applications of XML; Structure of an XML Document; XHTML and X/Secure; Data Warehousing; Data Marts and Operational Data Stores.

UNIT - VII: E-Marketing: Traditional Marketing; E-Marketing; Identifying Web Presence Goals – Achieving web presence goals, Uniqueness of the web, Meeting the needs of website visitors, Site Adhesion: Content, format and access; Maintaining a Website; Metrics Defining Internet Units of Measurement; Online Marketing; Advantages of Online Marketing.

UNIT - VIII: E-Security: Security on the Internet; Network and Website Security Risks – Denial-of-Service attacks, Viruses, Unauthorized access to a computer network; Vulnerability of Internet Sites; Network and Website Security – Transaction security and data protection, Security audits and penetration testing; E-Business Risk Management Issues; Firewall – Network policy, Advanced authentication mechanism, Packet filtering, Application gateways; Defining Enterprise Wide Security Framework.

UNIT - IX: E-Payment Systems: Electronic Funds Transfer; Digital Token Based E- Payment Systems; Modern Payment Systems; Steps for Electronic Payment; Payment Security; Net Banking.

UNIT - X: E-Customer Relationship Management: Customer Relationship Management (CRM) – Marketing automation, Enterprise customer management; Customer Relationship Management Areas; CRM Processes; Architectural Components of a CRM Solution – Customer's information repository, Campaign management, Event triggers, business logic and rules repository, Decision support tools, Higher level statistical analysis, Forecasting and planning tools, True channel management, Workflow management, Collateral management; Electronic Customer Relationship Management; Need, Architecture and Applications of Electronic CRM.

BLOCL IV: SUPPLY CHAIN MANAGEMENT AND KNOWLEDGE MANAGEMENT

UNIT - XI: Supply Chain Management: Supply Chain Management (SCM); Goals of SCM; Functions of SCM; Strategies of SCM; Electronic SCM and its benefits; Components of Electronic SCM; Electronic Logistics and its Implementation.

UNIT - XII: Wireless Application Protocol: Wireless Application Protocol (WAP); Architecture of WAP; Working of WAP; Wireless Technologies; Generations in Wireless Communications; Security Issues related to Wireless Communications; Mobile Computing in Four Dimensions; Wireless Millennium.

UNIT -XIII: Knowledge Management: Knowledge Management and its Goals; Collaborative Computing and Knowledge Management; Knowledge Management Tools; Features of Knowledge Management Tools; Knowledge Creating Process; Knowledge Management Strategies for Different Organizations; Knowledge Management in Research and Development Organizations.

UNIT - XIV: Implementation of E-Commerce: WWW.EBAY.COM - B2C Website – Registration, Time factor, Bidding process, Growth of eBay; PayPal – New Trend in Making Payments Online; National Electronic Funds Transfer.

REFERENCE BOOKS:

1. Bharat Bhasker. 2009. **Electronic Commerce** [Third Edition]. Tata Mc Graw Hill Publishing Co Ltd., New Delhi.
2. RaviKalakota., and Andrew B.Whinston. 2013. **Frontiers of Electronic Commerce** [Fourteenth Edition]. Dorling Kindersley (India) Pvt Ltd.,
3. Daniel Minoli., and Emma Minoli. 2007. **Web Commerce Technology Handbook**. [Thirteenth Edition]. Tata McGraw Hill Publishing, New Delhi.
4. Elias,M. and Awa. .2009. **E–Commerce From vision to Fulfillment** [Third Edition]. PHI Publishing, New Delhi.

Course Code	Title of the Course
33543	Research Methodology

Learning Objectives:

1. To provide students with a firm foundation and understanding of business research methods and the research process.
2. To understand the relevance of and be able to apply a range of both quantitative and qualitative research methods.

BLOCK I: RESEARCH PROPOSAL

UNIT – I: Research: Meaning of research; Types of research- Exploratory research, Conclusive research; Process of research; Research applications in social and business sciences; Features of a Good research study.

UNIT – II: Research Problem and Formulation of Research Hypotheses: Defining the Research problem; Management Decision Problem Vs Management Research Problem; Problem identification process; Components of the research problem; Formulating the research hypothesis- Types of Research hypothesis; Writing a research proposal- Contents of a research proposal and types of research proposals.

UNIT – III: Research Design: Meaning of Research Designs; Nature and Classification of Research Designs; Exploratory Research Designs: Secondary Resource analysis, Case study Method, Expert opinion survey, Focus group discussions; Descriptive Research Designs: Cross-sectional studies and Longitudinal studies; Experimental Designs, Errors affecting Research Design.

BLOCK II: CLASSIFICATION OF DATA

UNIT – IV: Primary and Secondary Data: Classification of Data; Secondary Data: Uses, Advantages, Disadvantages, Types and sources; Primary Data Collection: Observation method, Focus Group Discussion, Personal Interview method.

BLOCK IV: METHODOLOGY

UNIT – V: Attitude Measurement and Scaling: Types of Measurement Scales; Attitude; Classification of Scales: Single item Vs Multiple Item scale, Comparative Vs Non-Comparative scales, Measurement Error, Criteria for Good Measurement.

UNIT – VI: Questionnaire Design: Questionnaire method; Types of Questionnaires; Process of Questionnaire Designing; Advantages and Disadvantages of Questionnaire Method.

UNIT – VII: Sampling: Sampling concepts- Sample Vs Census, Sampling Vs Non Sampling error; Sampling Design- Probability and Non Probability Sampling design; Determination of Sample size- Sample size for estimating population mean, Determination of sample size for estimating the population proportion.

UNIT – VIII: Data Processing: Data Editing - Field Editing, Centralized in house

editing; Coding - Coding Closed ended structured Questions, Coding open ended structured Questions; Classification and Tabulation of Data.

UNIT – IX: Univariate and Bivariate Analysis of Data: Descriptive Vs Inferential Analysis, Descriptive Analysis of Univariate data- Analysis of Nominal scale data with only one possible response, Analysis of Nominal scale data with multiple category responses, Analysis of Ordinal Scaled Questions, Measures of Central Tendency, Measures of Dispersion; Descriptive Analysis of Bivariate data.

UNIT – X: Testing of Hypotheses: Concepts in Testing of Hypothesis – Steps in testing of hypothesis, Test Statistic for testing hypothesis about population mean; Tests concerning Means- the case of single population; Tests for Difference between two population means; Tests concerning population proportion- the case of single population; Tests for difference between two population proportions.

BLOCK III: RESEARCH REPORT

UNIT – XI: Chi-square Analysis: Chi square test for the Goodness of Fit; Chi-square test for the independence of variables; Chi-square test for the equality of more than two population proportions.

UNIT – XII: Analysis of Variance: Completely randomized design in a one-way ANOVA; Randomized block design in two-way ANOVA; Factorial design.

UNIT – XIII: Research Report Writing: Types of research reports – Brief reports and Detailed reports; Report writing: Structure of the research report- Preliminary section, Main report, Interpretations of Results and Suggested Recommendations; Report writing: Formulation rules for writing the report: Guidelines for presenting tabular data, Guidelines for visual Representations.

UNIT – XIV: Ethics in Research: Meaning of Research Ethics; Clients Ethical code; Researchers Ethical code; Ethical Codes related to respondents; Responsibility of ethics in research – Uses of library and internet in research.

REFERENCE BOOKS:

1. Gupta S. L and Hitesh Gupta (2015), “Research Methodology: Text and Cases with SPSS Application”, International Book House Private Limited, New Delhi.
2. Peer Mohamed and Shazuli Ibrahim (2013), “Research Methodology”, Pass Publications, Madurai.

Course Code	Title of the Course
33544	Banking and Insurance

Learning Objectives:

1. To provide adequate basic understanding about the Banking, Insurance.
2. To give adequate exposure to the operational environment in the field of the Banking and Insurance.
3. To prepare students to exploit opportunities being newly created in the field of Banking & Insurance.

BLOCK I: BANKING THEORY AND PRACTICE

UNIT – I: Banker and Customer – Origin of banking – Banker – Banking and other business – customer – Relationship between banker and customer – General relationship Special relationship – Banker’s lien.

UNIT – II: Deposits – General precautions for opening account – Current deposit account-Fixed deposit account – Savings deposit account – Recurring deposit – Other deposits.

UNIT – III: Pass book – Correct entry – Wrong entry – Entries favourable to the customer – Entries favourable to the bankers.

UNIT – IV: Crossing – General crossing – Special crossing – Double crossing – Who can cross a cheque – Opening of crossing.

UNIT – V: Paying banker – Circumstances under which a cheque can be dishonoured – Answers to dishonor cheques – Payment in due course – Holder in due course – Recovery of money paid by mistake.

UNIT – VI: Collecting banker – Banker as a holder for value – Banker as an agent – Conversion – Statutory protection – Basis of negligence – Duties of collecting banker.

UNIT – VII: Subsidiary services – Agency services – Payment and collection – Purchase and sale of securities – Executor – Administrator and trustee – Attorney – Miscellaneous services.

BLOCK II: INSURANCE

UNIT – VIII: Insurance and Risk - significance of insurance and risk, general structure of the insurance market, significant aspects of this industry - Reforms in Indian Insurance Industry - importance of the privatization of insurance industry, problems associated with public insurance enterprises, relation between insurance and economic growth.

UNIT – IX: Regulations Relating to Insurance Accounting and Management - framework for IRDA rules and regulations regarding general insurance investment in the country, role of financial reporting in managing insurance operations, significance of determining solvency margins.

UNIT – X: Life Insurance - factors influencing the key functioning of insurance organizations insurable interest, role of riders in insurance policies - Non-life Insurance - elements of fire insurance contract and its ancillary features. Significance of marine insurance and its various policies, the role of rural insurance in making people’s lives better in rural India.

UNIT – XI: Non-life Insurance - II - types of motor insurance policies, critical aspects of aviation industry in the country, significance of liability insurance in India - Functions and Organization of Insurers - components of the distribution system of life insurance companies in the country, role of agents in the life insurance sector in India, important activities carried out in a life insurance organization

BLOCK III: CLAIM MANAGEMENT AND FINANCIAL MANAGEMENT IN INSURANCE

UNIT – XII: Product Design and Development: Product development in the life and non- life insurance sectors in India, role of risk evaluation in the process of insurance product formation, future trends in the domain of insurance product design and development - Insurance Underwriting - need for insurance underwriting, factors that affect the activities performed by the underwriter, steps involved in the process of insurance underwriting.

UNIT – XIII: Claims Management: factors affecting the insurance claim management system, types of documents needed in various types of claims, meaning of ‘Causa Proxima’ in insurance claim settlement - Insurance Pricing and Marketing - principles of insurance pricing and marketing, tools and techniques used in pricing individual life and health insurance.

UNIT – XIV: Financial Management in Insurance Companies and Insurance Ombudsman: importance of financial management in insurance companies, tools of managing expenses in the insurance companies, modes used by the insurance companies in channelizing their funds - Reinsurance: reinsurance in the insurance sector. Areas of the application of reinsurance - Information Technology in Insurance - application of information technology in the insurance sector, role of insurance companies in insurance security, contours of the future of insurance in rural areas.

REFERENCE BOOKS:

1. Gordon E and Natarajan K, (2010), “Banking Theory, Law and Practice”, Himalaya Publishing House, Mumbai.
2. Dr. Sunilkumar (2016), “Insurance and Risk Management”, Galgotia Publishing Company.
3. Dr. P. Periasamy (2011), “Principles and Practice of Insurance”, Himalaya Publishing House, Mumbai.

**MASTER OF LIBRARY
AND INFORMATION
SCIENCE (M.Lib.I.Sc)**

Sl. No.	Course Code	Title of the Course	CIA Max.	ESE Max.	TOT Max	C Max.
FIRST YEAR						
I Semester						
1.	32311	Information Processing and Retrieval	25	75	100	4
2.	32312	Library and Information System Management	25	75	100	4
3.	32313	Information Technology and information Systems	25	75	100	4
4.	32314	Information Technology (Practice)	25	75	100	4
		Total	100	300	400	16
II Semester						
5.	32321	Academic Library System	25	75	100	4
6.	32322	Technical Writing	25	75	100	4
7.	32323	Research Methodology	25	75	100	4
8.	32324	Information Processing and Retrieval (Practice)	25	75	100	4
		Total	100	300	400	16
		Grand Total	200	600	800	32

Course Code : 32311

Paper 1: INFORMATION PROCESSING & RETRIEVAL

BLOCK I: CLASSIFICATION SCHEMES

Unit I

Concepts of Information transfer – Universe of subjects

Unit II

Structure & development – Impact on the schemes for classification - CC, DDC, UDC, & LC

BLOCK II: INDEXING TECHNIQUES

Unit III

Indexing Languages – Vocabulary Control – Thesaurus

Unit IV

Design of indexing languages, general theory of subject indexing languages.

Unit V

Indexing Systems & Techniques – Pre coordinate indexing – PRECIS, POPSI, Chain indexing – Relational indexing,

Unit VI

Post Coordinate Indexing Systems, Uniterm Indexing, Citation Indexing, KWIC and KWOC, Evaluative Studies – Crane field. I.

BLOCK III: BIBLIOGRAPHIC STANDARDS AND FORMATS

Unit VII

Bibliographic Standards – ISBD, (G), AACR 2R, ISBN, ISDN, ISSN, ISO 2709

Unit VIII

Bibliographic Formats - Bibliographic Standards : MARC, CCF, UNIMARC, MARC21, MARC XML, Dublin Core Z39.5.

BLOCK IV: INFORMATION RETRIEVAL SYSTEM

Unit IX

Information Retrieval System – Structure, Functions and Components

Unit X

Search strategy – Criteria for evaluation – Recall, Precision – Relevance and failure analysis.

BLOCK V: WEB TECHNOLOGY

Unit XI

Boolean logic, limitations of Boolean logic, processing query expression: rules for operations

Unit XII

Recent Trends in IRS - Internet information retrieval - Web-based information retrieval

Unit XIII

Automatic Indexing, Web Ontology

Unit XIV

Sequential file, structure of a sequential file, inverted file, structure of an index file, matching criteria,

SUGGESTED READINGS:

1. Alberico, R. and Micco M.(1990). Expert systems for reference and Information retrieval. West Port : Meckler.
2. Atchison, J. & Gilchrist, A.(1972). Thesaurus construction: a practical manual. London: Aslib.
3. Austin, D.(1984). PRECIS: A manual of concept analysis and subject Indexing. 2nd ed.
4. Chowdhry, G.G.(2003). Introduction to modern Information retrieval. 2nd Ed. London, Facet Publishing.
5. Cleaveland, D. B.(2001). Introduction to Indexing and abstracting. 3rd Ed. Englewood, Colo. : Libraries Unlimited.
6. Ghosh, S.B. and Biswas, S.C. (1998). Subject Indexing systems: Concepts, methods and techniques. Rev. ed. Calcutta: IASLIC.
7. Lancaster, F. W. (1968). Information retrieval systems, characteristics, testing and evaluation. London: Facet Publishing.
8. Pandey, S.K. Ed.(2000).Library Information retrieval. New Delhi: Anmol.
9. Seetharama, S. (1997).Information consolidation and repackaging. New Delhi: ESS ESS.
10. Vickery, B.C.(1970). Techniques of Information retrieval. London: Butterworths.

Course Code : 32312

Paper 2: LIBRARY AND INFORMATION SYSTEM MANAGEMENT

BLOCK I: LIBRARY MANAGEMENT AND THOUGHTS

Unit I

Concept of management and organization – Definition – Library and information system as Non Profit Organizations – Library as a system - Organisational Structure of different types of library

Unit II

Various Schools of Management Thought: Classical, Human relations

Unit III

Behavioral schools of thought – Management theories: Taylor, Fayol, Gantt, McGregor, Maslow.

BLOCK II: MANAGEMENT PRINCIPLES

Unit IV

Concept and principles of Scientific Management – Definition and scope – Methodology – Advantages and limitations. Application of Scientific Management principles to Library and Information Centres

Unit VI

Systems approach – Systems analysis in library and information systems – Contingency approach – Decision making approach, MBO, POSDCORB

BLOCK III: COLLECTION DEVELOPMENT POLICY

Unit VII

Collection Management: Policy and procedures for print and non-print resources including print and ejournals - Selection criteria and tools - Barriers of acquisition including licensing of electronic resources

-Library security.

BLOCK IV: MANAGEMENT INFORMATION SYSTEM

Unit VIII

Management Information System (MIS) – Designing – Work Analysis – Flow process

chart –

Decision flow charts, Block diagram, Gantt chart, network analysis, PERT and CPM.

Unit IX

Housekeeping Operations: Book / Information Resource selection and acquisition section, License negotiation and relevant rights issues - Technical processing section- Serial control and circulation control Policy, procedures and methods of maintenance and stock verification -- Collection evaluation and weeding out

BLOCK V: HUMAN RESOURCE MANAGEMENT

Unit X

Personnel management – Human resources planning – Recruitment – Selection – Training and Development - Performance appraisal promotion – Motivation.

Unit XI

Financial Management - Sources of Library Finance in different types of libraries - Budget techniques and method, budgetary control - Costing library process, functions and services - Cost effectiveness and Cost benefit analysis Report writing and Library Statistics

Unit XII

Building and space management of library and information centres - Safety issues - Equipments and furniture- in addition for differently able people - Library standards - Indian and International

BLOCK VI: ELECTRONIC LIBRARY &TQM

Unit XIII

Management of Electronic libraries - Job descriptions of IT manager - Evaluation of IT - Technology Assessment –Equipment, Infrastructure, Service, Staff, Self - Technology development –update

Unit XIV

Total Quality Management : Concept, Definition, Elements - Operations Management Systems - Tools and techniques for improving quality-Inventory planning and control, - Inventory control model - Quality Audit, LIS related

Standards - Resource mobilization, Outsourcing, Library Consortia, Open Access
- Technology Management

SUGGESTED READINGS:

1. Evans, G Edward. Developing Library and Information centre Collections. New York, Libraries Unlimited, 2005
2. Evans, G Edward: Management techniques for librarians, 2nd Ed., New York, Academic Press, 1983.
3. Gorman, G.E. International yearbook of Library and Information management 2003- 2004 metadata applications and management. London, L.A., 2003
4. Kishan Kumar. Management of libraries in Electronic environment. Delhi, Har-Anand Publications, 2007
5. Kishore, Jugal. Personal Management in Libraries. Delhi, EssEss, 1981
6. Krishna Kumar. Library Administration and Management. Delhi, Vikas, 2004
7. Kumar, P.S.G. Management of Library and Information Centres (paper V of UGC Model Curriculum). Delhi, B.R.Pub., 2003
8. Lahiri, Ramansu. Management of Libraries concepts and practices. New Delhi, EssEss, 1996
9. Lancaster, F.W. Technology and Management in Library and Information Services. London, Lib. Assoc., 1997
10. Bavakutty, M & Majeed, Abdul. Methods for Measuring Quality of Libraries. ISBN : 81-7000-439-X , 2005

Course Code : 32313

Paper 3: INFORMATION TECHNOLOGY & INFORMATION SYSTEMS

BLOCK I: FUNDAMENTALS OF COMPUTERS

Unit I

Computer basics – Computer generations and classification - Understanding IT and components of IT Computers and Communication Technologies (Data Process Cycles and Operations)

Unit II

Role of Computers in information transfer. Block Diagram of Computer - Classification of computers – Analog and Digital - Generation of computers Stand alone systems including Note Books and Servers

Unit III

Input / Output Devices: ❖ Understanding Personal Computer: CPU, Storage and Input/Output Devices, RAM and ROM, USB, Hard Discs, Scanners and Digital Camera, Joysticks & Printers

BLOCK II: STANDARD NUMBERS AND OPERATING SYSTEM

Unit IV

Data presentation in Computers: Binary Number System, Overview of Character Coding Standards- ASCII and UNICODE

Unit V

Computer Software : Windows, LINUX - System and Application Software - Programming Concepts - Open Source and Proprietary Library Software.

BLOCK III: DATABASE MANAGEMENT SYSTEM

Unit VI

File Organisation: Files and Databases, Data Elements, Fields, Records, DBMS and RDBM Packages - Database models – Hierarchical, network, relational. Unit VII

Planning of Information System. Database system – Definition, scope, need and purpose - Basic features of WINISIS and MS Access

Unit VIII

Information System analysis and Design – Overview, components, System

Development Lifecycle

BLOCK IV: COMPUTER HARDWARE/SOFTWARE AND NETWORKING

Unit IX

Hardware and software management : Server configuration - Managing the servers - Backups - RAID application - Software licensing- AMC issues

Unit X

Networking: Technological development in communication: Transmission media - Digital Networks – LAN, WAN, PSTN, ISDN

BLOCK V: LIBRARY AUTOMATION / NETWORKS

Unit XI

Library Automation :Basic: Retrospective Conversion Techniques , Library Automation Software – OPAC - Automation Identification Methods: Bar coding, RFID - Selection criteria - for hardware and software - Library Automation Software – Open source / Commercial

Unit XII

Communication : Land line and Mobile networks - Data transmission in telephone networks with Major Telecommunication –Networks - Motivation for ISDN and ISDN channels - User interfaces - Broadband ISDN Optical Communication systems, FAX, Modem, Teletext, Videotext, email, Internet, and Intranet.

Unit XIII

National Information Systems – : NISCAIR (formerly INSDOC),
DESIDOC, SENDOC, INFLIBNET, DELNET

Unit XIV

International Information Systems - – INIS, AGRIS, BIOSYS – Open
Office Tools. National Information Systems

SUGGESTED READINGS:

1. Balakrishanan, Shyama&Paliwal, P.K. Current Scenario of Information Technology. Delhi, Anmol, 2001
2. Brophy, Rowley. The basics of information systems. London, Library Association, 1996.
3. Dhiman, A.K. Basics of Information Technology for Library and Information

- Scientists. 2 Vols., Delhi, EssEss, 2003
4. Kumar, P.S.G. Information Technology: Basics: (Paper IV of UGC Model Curriculum). Delhi, B.R.Pub., 2003
 5. Mohamed Acly and Gill, Needham, Eds. M- Libraries 3: Transforming libraries with Mobil technology. Chennai: Allied, 2012.
 6. Microsoft Corporation. Microsoft Visual C++ 6.0 RUN - TIME Library Reference – Vol.4. Washington, Microsoft Press, 1998.
 7. Kumar, P.S.G. Information Technology: Basics: (Paper IV of UGC Model Curriculum). Delhi, B.R.Pub., 2003

Course Code : 32314
Paper 4: INFORMATION TECHNOLOGY- PRACTICE

Practice

1. Creating a database using MS – Access, My SQL
2. Thorough Knowledge of MS-Word, MS-EXCEL & and Power Point.
3. Installing and searching CD-ROM Database and Online Databases
4. Formulating Queries and searching using Boolean Operators.

Paper -5 ACADEMIC LIBRARY SYSTEM

BLOCK I : ACADEMIC LIBRARY FUNCTIONS

Unit I

Types of Libraries – Role of Academic libraries and functions of higher education

Unit II

Growth of University and College libraries in India and the role of UGC and other

Unit III

National Bodies in promoting Academic Libraries.

BLOCK II: LIBRARY INFRASTRUCTURE

Unit IV

Authorities in University/college libraries – Budgeting – Collection Building – problems and methods

Unit V

Centralization & Decentralization of University Libraries – Merits and Demerits

BLOCK III: RESOURCE SHARING

Unit VI

Resource Sharing and – Networking – Role of INFLIBNET

Unit VII

Academic libraries – Types of users & their information needs

Unit VIII

User education and services – User behavior and user studies.

Unit IX

Staffing Pattern – staff Formula – standards for Academic Libraries

BLOCK IV: LIBRARY AUTOMATION DIGITAL LIBRARY

Unit X

Automation in academic libraries – Impact of information technology on academic library services

Unit XI

Electronic Library, Digital Library, Virtual Library.

Unit XII

Library Building – Furniture's and equipment's

BLOCK V: PRESERVATION AND CONSERVATION

Unit XIII

Preservation and Conservation of Library Materials – Methods and Techniques.

Unit XIV

Recent developments of academic libraries and its Services

SUGGESTED READINGS:

1. American Association of School Librarians. Standards for school library programmes. 1969. ALA, Chicago (Latest).
2. Baker, David, Ed. Resource management in academic libraries. 1997. L.A.London.
3. Balakrishanan, Shyama&Paliwal, P.K. Academic Library automation
4. Bavakuty, M. Libraries in Higher Education. ESS ESS Pub., 1988
5. BhaskaraRao, P. Information Networks and Resource sharing. Delhi, Reliance, 1998
6. Brophy, Peter. The academic library. 2000. Library Association, London.
7. Chapman, Liz. Managing acquisitions in library and information services 2001. Library Association, London.
8. Jordon, Peter. The academic library and its users.1998. Gower, London.
9. Lyle, G R. Administration of the college library. Ed. 4. 1974. Wilson, New York.
10. Metcalf, K D. Planning academic and research library building. 1965. McGraw Hill, New York.

Course Code : 32322
Paper 6: TECHNICAL WRITING

BLOCK I: COMMUNICATION SYSTEM

Unit I

Communication Process – Characteristic features of technical writing -
Reader-writer relationship.

Unit II

Types of Communication – Verbal, Non-Verbal, Written - Effective
Communication Skills, Oral and Written Communication Skills

Unit III

Language as a medium for communication of thought - Body language and
common gestures
- Meeting, Telephonic Communication and Presentation Skills - Good
Questioning and Listening Skills

Unit IV

Characteristics and features of technical writing - Target groups in written
communication- Level of technicality in Scientific Communication -
Readability and text – Aberrations in technical writing.

BLOCK II: PUBLICATION & STYLE FORMAT

Unit V

Organization and Presentation of data in abstracts, textual manner, references

Unit VI

Preparation of popular articles, technical reports, monographs, house journals.

Unit VII

Repackaging of information: Preparation of Review, Trend report, Progress
report.

Unit VIII

Editorial Process: Editorial tools, use of style manuals - proof reading – Role of
Editor –
Publication

Unit IX

Use of style manuals - APA, MLA and Chicago style manuals using MS Word
and Zotero

BLOCK III: REPORT WRITING

Unit X

Office Communication: Report Writing : Annual Report, Daily Progress Report, Event Report, Promotion - Report, Confidential Report, User Satisfaction Report - Office Writing: Notice Writing, Memo Writing, - Letter Writing – Publisher, Book - Seller, Binders, Users- Patrons- Clienteles, = ♦ Presentation: Body language, Book review, At the time of Library

Committee meeting, Staff meeting, Condolence meeting, Business meeting, Orientation, Conference, Seminars or Workshop – Training Programme

Unit XI

Categories of Technical Communication : Structure, function and types of Technical communication - Definition, purpose, characteristics of Technical Communication

Unit XII

Technical papers / Articles, Review articles, Technical Reports, Monographs, Dissertations, In-House bulletins - Information analysis, Consolidation and Repackaging Products- Technical Digest, - Trend Reports, State-of-the-art Reports, Annual Reports, Manuals, Handbooks and Directories

BLOCK IV: BUSINESS

COMMUNICATIONS

Unit XIII

Business Writing: Business Plan and Mission Writing - Terms and Condition with Book Sellers, Publishers, Venders, Service Providers - MOUs – Licensing, Contract Writing - Effective Covering Letters - Publisher, Book Seller, Binders, Users-Patrons- Clienteles

Unit XIV

Legal Issues : Freedom of information and privacy- Intellectual property in media - Database rights - Patents and Tread Marks - Quality issues and liabilities of Ethics – Pre-publication and post-publication process.

SUGGESTED READINGS:

1. Gordon, H. M. and Walter J. A. *Technical Writing*. 5th ed. London: Holt, 1986.
2. James, H. S. *Handbook of Technical Writing*. NTC Business Books, 2010.
3. Richard, W. S. *Technical Writing*. New York: Barnes and Noble, 2008.
4. Krishnan Kumar, *Research Libraries in Developing Countries*.
5. Santhosh Gupta, *Research Methodology and Statistical Techniques*, New Delhi: Deep & Deep, 2000.
6. Lancaster FW, *information Retrieval Systems*, Ed- 2, 1976.

Course Code : 32323
Paper 7: RESEARCH METHODOLOGY

BLOCK I: FUNDAMENTALS OF RESEARCH

Unit I

Foundations of research; Nature, definition and objectives - Types of research, Basis Concepts of research; Scientific Method; Ethical consideration of research.

Unit II

Library and Information Science (LIS) as an interdisciplinary subject, Significance of research in LIS; Areas of research in Library and Information Science.

Unit II

Scientific method – Nature of research in library & information science.

Unit III

Research methods – Definitions – Sources – Advantages – Limitations historical method, case study method, survey method, experimental method and other methods (Field investigation Research, Evaluation research, Action research, Ex post Facto)

BLOCK II: RESEARCH PROBLEMS & LITERATURE SEARCH

Unit IV

Research Problem: Sources of research problem – Locating the problem – Formulation of the research problem – Criteria in selecting a problem – Defining and delimiting problems

Unit V

Literature search – Importance of surveying related literature – Library sources, research reviews, catalogue, indices, abstracts, bibliographies, microforms, computerized information retrieval systems.

BLOCK III: RESEARCH PROBLEMS AND HYPOTHESIS

Unit VI

Hypothesis – Meaning, Importance, types, sources, characteristics- Formulation of Hypothesis, Different forms of hypothesis – Difficulties in formulation – Testing the hypothesis.

Unit VII

Planning of research; Planning Process; Review of literature, Selection of a problem-problems, process of identification, criteria of selection, formulation of problem - Research design-Essentials of good research design & its importance, preparation of the research design/writing the research proposal

BLOCK IV: TYPES OF RESEARCH AND DATA COLLECTION METHODS

Unit VIII

Types: Descriptive, Diagnostic, Exploratory; and Experimental.

Unit IX

Data collection, primary and secondary data, methods of data collection, Research Technique and Tools; Questionnaire, Schedule, Interview, Sampling, Scale and Check list, Library Records and Reports

Unit X

questionnaire construction & design, types of questionnaire – secondary data sources and precautions in the use of secondary data

BLOCK V: STATISTICAL SOFTWARE & STYLE MANUAL

Unit XI

Data analysis, interpretation and presentation – Research reporting.

Unit XII

Statistical analysis software SPSS, PSP and SOFA

Unit XIII

Report Writing – Structure and Components – Style manuals – APA, MLA, Chicago. MS Word and Zotero;

Unit XIV

Bibliometrics, Scientometrics, and Informetrics, Webometrics

SUGGESTED READINGS:

1. Busha, C. Hand Harter, S.S. (1980). Research methods in librarianship: Techniques and interpretation. Orlando, Academic press.
2. Charles, H. et.al.(1993). Research methods in librarianship: Techniques and interpretations, New Delhi: Sage.
3. Fowler, F.J. (1993). Survey research methods. New Delhi: Sage.
4. Goode, W.J. and Hatt, P.K. (1986). Methods in social Science research. New Delhi: McGraw Hill.

5. KrishanKumar(1992). Research methods in Library and Information Science. New Delhi: Vikas
6. Krishnaswami, O.R. (1993). Methodology of Research in Social Sciences. Bombay:Himalaya.
7. Leddy, P. D. (1980).Practical research: Planning design. London: Clive-Bingley.
8. RavichandraRao, I.K. (1985). Quantitative methods for Library and Information Science. New Delhi: Wiley Eastern.
9. Slater, M. (1990). Research methods in Library and Information studies. London: L.A.
10. Stevens, R.E. Ed.(1971). Research methods in librarianship. London: Clive Bingley.

Course Code : 32324
Paper 8. INFORMATION PROCESSING & RETRIEVAL –
PRACTICE

Practice

1. Classification of Documents according to abridged English Edition of UDC and CC- 6th edition.
2. Cataloguing of books, Serials and Non - Book material according to AACR 2R and Sears List of Subject Headings.