

ALAGAPPA UNIVERSITY

(A State University Accredited with A+ Grade by NAAC (CGPA: 3.64) in the Third Cycle)
Karaikudi, Tamilnadu, India

DIRECTORATE OF DISTANCE EDUCATION

PROGRAMME PROJECT REPORT

for

B.Sc (Computer Science)



Submitted to
UGC, DISTANCE EDUCATION BUREAU (DEB)
New Delhi

For seeking approval to introduce new programme through Distance Education Mode

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B.Sc (Computer Science)
Choice Based Credit System (CBCS)
(With effective from June 2018-19 onwards)

a) Programme mission and objectives

Mission:

It provides a strong foundation in the theoretical concepts of Computer Science as well as a firm grounding in Programming Languages. It is designed to enable one to undertake software applications for business and industry. Successful candidates could also opt for a teaching career in secondary schools.

Objectives:

The programme aims at inculcating essential skills as demanded by the industry through an interactive learning process. The broad objectives of the programme are:

- To train students in basic computer technology concepts and information technology applications.
- To enhance their career opportunities in the software development and maintenance sector in the state.
- To expose the students to Open Source Technologies so that they become familiar with it and can seek appropriate opportunity in trade and industry.
- To give hands on experience to students while developing real life IT application as part of the study.
- To augment the knowledge base of the students, through various activities which will be complementary to the theoretical studies.

Outcome:

- To widen the ability to plan, analyze, design, code, test, implement & maintain a software product for real time system
- To prepare the learners to pursue higher studies in computing or related disciplines and to work in the fields of teaching and research
- Pursuing B.Sc (CS) in this Computer oriented and technology driven era opens up a large number of job opportunities for the students. With in depth knowledge of Computer Application, Computer system, and software, the students can seek employment as Computer operator, Software Engineer, Application Specialist, Computer operator, Computer Teacher/ Instructor.

b) Relevance of the program with HEI's mission and goals

HEI's mission and goals to be offered through distance mode to reach quality higher education to the rural learners. The distance mode meets the mission of HEI's like Digital India and paper-less transaction will enrich the human resources for the uplift of the nation.

c) Nature of prospective target group of learners

The nature of prospective target group of learners is graduates from various disciplines like mathematics, physics, chemistry, electronics etc. It also includes the learners who want to become Entrepreneurs like web designers, Developers etc.

d) Appropriateness of programme to be conducted in open and distance learning mode to acquire specific skills and competence:

B.Sc CS programme through distance learning mode is developed in order to give subject specific including a) Digital computer organization b) Operating Systems c) Computer Graphics d) Unix and shell programming etc.

e) Instructional Design

e.1 Regulations and curriculum design

1. The University reserves the rights to amend the regulations, schemes of examinations and syllabi from time to time based on recent IT trends
2. Every student should secure 96 credits to complete B.Sc Computer Science programme.
3. Each theory course carries 4 credits with 75 marks in the university end semester and 25 marks in the internal assessment and each practical (lab) course carries 4 credits with 75 marks in the university end semester examination and 25 marks in the internal assessment.

Programme Code: 130

COURSE OF STUDY AND SCHEME OF EXAMINATION

I SEMESTER

S.No	Subject Code	Title	CIA marks	ESE marks	Total Marks	credits
1	13011 A / B	Part I: Tamil - Paper I /Communication Skills I	25	75	100	4
2	13012	Part II: English Paper I	25	75	100	4
3	13013	Programming in C	25	75	100	4
4	13014	Lab : Programming in C	25	75	100	4
			100	300	400	16

II SEMESTER

S.No	Subject Code	Title	CIA marks	ESE marks	Total Marks	credits
1	13021 A / B	Part I: Tamil Paper- II/Communication Skills- II	25	75	100	4
2	13022	Part II: English Paper- II	25	75	100	4
3	13023	Object Oriented Programming and C++	25	75	100	4
4	13024	Lab : Object Oriented Programming and C++	25	75	100	4
		Total	100	300	400	16

III SEMESTER

S.No	Subject Code	Title	CIA marks	ESE marks	Total Marks	credits
1	13031 A / B	Part I: Paper : Tamil Paper- III/Human Skill Development- I	25	75	100	4
2	13032	Part II: English Paper- III	25	75	100	4
3	13033	Data Structures and Algorithms	25	75	100	4
4	13034	Lab : Data Structures and Algorithms	25	75	100	4
		Total	100	300	400	16

IV SEMESTER

S.No	Subject Code	Title	CIA marks	ESE marks	Total Marks	credits
1	13041 A / B	Part I: Tamil Paper IV /Human Skill Development- II	25	75	100	4
2	13042	Part II: English Paper IV	25	75	100	4
3	13043	Java Programming	25	75	100	4
4	13044	Lab : Java Programming	25	75	100	4
		Total	100	300	400	16

V SEMESTER

S.No	Subject Code	Title	CIA marks	ESE marks	Total Marks	credits
1	13051	Operating Systems	25	75	100	4
2	13052	Relational Database Management Systems	25	75	100	4
3	13053	Computer Architecture	25	75	100	4
4	13054	Lab : RDBMS	25	75	100	4
		Total	100	300	400	16

VI SEMESTER

S.No	Subject Code	Title	CIA marks	ESE marks	Total Marks	credits
1	13061	Computer Network	25	75	100	4
2	13062	Visual Basic Programming	25	75	100	4
3	13063	Software Engineering	25	75	100	4
4	13064	Lab : Visual Basic Programming	25	75	100	4
		Total	100	300	400	16
			600	1800	2400	64

CIA: Continuous Internal Assessment

ESE: End Semester Examination

Course Code Legend:

1	3	0	X	Y
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XXX – Programme code for B.Sc CS

X – Semester Number

Y – Course Number in the Semester

No.of Credits per Course (theory) : 4

No.of Credits per Course (practical) : 4

Total No.of credits per Semester : 16

Total No.of credits of the programme : $16 * 6 = 96$

e.2 Detailed Syllabi

SEMESTER I

Course Code	Title of the Course
13011A	Part I: Tamil - Paper I

PART- I TAMIL

பொதுத்தமிழ்

நோக்கம் : மொழி அறிவு, இலக்கண அறிவை வளர்த்தல்

பிரிவு -1 : இசைப்பாடல்

கூறு 1

1. கண்ணதாசன் - ஸ்ரீ கிருஷ்ண கானம்

1. புல்லாங்குழல் கொடுத்த
2. குருவாயூருக்கு வாருங்கள்

கூறு 2

1. கோகுலத்து பசுக்கள்
2. கோகுலத்தில் ஒரு நாள் ராதை
3. ஆயர்பாடி மாளிகையில்

கூறு 3

பட்டுக்கோட்டை கல்யாண சுந்தரம்

1. நெஞ்சில் குடியிருக்கும்
2. செய்யும் தொழிலே தெய்வம்

கூறு 4

1. பாரதியார்

கண்ணன் என் விளையாட்டுப்பிள்ளை
பாரத மாதா திருப்பள்ளி எழுச்சி

பிரிவு - 2 : கவிதை, புதுக்கவிதை

கூறு 5

1. பாரதிதாசன் - உலகப்பன் பாட்டு (5)
2. நாமக்கல் கவிஞர் - நோயற்ற வாழ்வு 7 பாட்டு
3. பெ.தூரன் - நிலா பிஞ்சு

கூறு 6

1. வல்லிக் கண்ணன் - வெறும் புகழ்
2. கு.ப.இராஜகோபாலன் - எதற்காக?
3. மீரா - பதினைந்து

கூறு 7

1. சிற்பி - சர்ப்ப யாகம்
2. ஞானக்கூத்தன் - தோழர் மோசிகீரனார்

கூறு 8

1. அப்துல் ரகுமான் - கண்ணும் எழுதேம்
2. சண்முக சுப்பையா - வயிறு

பிரிவு - 3 : காப்பியம்

கூறு 9

1. சிலப்பதிகாரம் - வழக்குரை காதை
2. கம்பராமாயணம் - அயோத்தியா காண்டம்

பிரிவு - 4 : காப்பியம்

கூறு 10

1. சீறாப்புராணம் - ஈத்தங்குலை வரவழைத்த படலம் (1)

கூறு 11

தேம்பாவணி - காட்சிப்படலம்

பாடல் எண் (ஒவ்வொரு பாடலின் முதல்வரி)

1. இன்னவாயில்
2. கொழுந்துறும்
3. பஞ்சு அரங்கில்

கூறு 12

தேம்பாவணி - காட்சிப்படலம்

பாடல் எண் (ஒவ்வொரு பாடலின் முதல்வரி)

4. எண்ணுளே
5. ஒண்தலங்கள்
6. இரவியேந்த கஞ்சக்

கூறு 13

தேம்பாவணி - காட்சிப்படலம்

பாடல் எண் (ஒவ்வொரு பாடலின் முதல்வரி)

7. கன்னியாயதாயும்
8. ஏந்தி ஓங்கு உளத்து
9. ஆவ தேமுனர்
10. கொல்லும் வேலொடும்

கூறு 14

தேம்பாவணி - காட்சிப்படலம்

பாடல் எண் (ஒவ்வொரு பாடலின் முதல்வரி)

11. என்ற வாசகம்
12. அம்பினால்
13. வேண்டும் ஓர் வினை

Course Code	Title of the Course
13011B	PART- I : COMMUNICATION SKILLS I

Learning objectives:

1. To make students to understand the basic skills of Communication.
2. To acquaint students with the important features of Communication skills.

BLOCK I: COMMUNICATION: AN INTRODUCTION

Unit - I Communication – Meaning – Types- Importance

Unit – II Barriers to Effective Communication – Principles – Principles of Effective Communication

BLOCK II: ORAL COMMUNICATION

Unit – III Oral Communication – Meaning – Importance- Forms of Oral Communication

Unit – IV Intonation –Meaning – Function- Types
Preparation of Speech- Steps Involved

Unit – V Principles of Effective Oral Communication

BLOCK III: WRITTEN COMMUNICATION

Unit – VI Written Communication – Meaning –Steps – Importance- Advantages Use of words and Phrases

Unit – VII Sentence – Meaning –Sentence formation- Characteristics of an Effective Sentence

Unit–VIII Paragraph Writing –Essay Writing –Steps Involved –Outline-Layout – Contents- Drafting-Correction- Final Draft

BLOCK IV: OFFICIAL COMMUNICATION

Unit – IX Application for Employment and Curriculum Vitae –Steps involved

Unit – X Non –Verbal Communication – Meaning –Types –Body Language – Postures-Gestures –Facial Expressions –Eye Contact

Unit – XI Report Writing –Report –Types of Reports –Format of a Report

Unit – XII Essentials of a Good Report –Preparation of Report-Procedure Involved

Unit – XIII Meetings-Purpose of the Meeting – Procedure

Unit–XIV Group Discussion–Quality of Content-Participation –Logical Presentation – Behavioural Skills

References:

1. Krishna Mohan & Meera Banerjee, Developing Communication Skills, 2005.
2. Geetha Nagaraj, Write to Communicate, 2004.
3. Wren & Martin, English Grammar and Composition, 2002.
4. Dale Carnegie, How to Win Friends and Influence People, 1981.
5. Dale R Jordan, Language Skills and Use.
6. Gartside L. Bahld, Nagammiah and McComas, Satterwhite, Modern Business Correspondence.
7. Rajendra Pal and Kortahalli J S, Essentials of Business Communication.
8. Wallace, Michael J, Study Skills in English.
9. Editors of Readers Digest, Super Word Power.

Course Code	Title of the Course
13012	Part- II: English Paper I

Learning objective:

To make the students master the different topics prescribed in the Prose, Grammar and Composition.

BLOCK I: PROSE I

Unit – I	Water-the Elixir of life	- C.V. Raman
Unit – II	Mrs. Packletide’s Tiger	- SAKI
Unit – III	A Deed of Bravery	- Jim Carbett
Unit – IV	The Cat	- Catharine M. Willson
Unit – V	On Letter Writing	- Alpha of the Plough

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Unit – VI	Our Ancestors	- Carl Sagan
Unit – VII	Our Civilization	- C.E.Foad
Unit – VIII	A Hero on Probation	- B.R. Nanda
Unit – IX	Dangers of Drug Abuse	- Hardin B. Fones
Unit – X	Food	- J.B.S. Haldane

BLOCK III: DEVELOPING GRAMMATICAL SKILLS

Unit – XI	- Articles-Gerunds-Participles-Infinitives-Modals-Proposition- Tenses
Unit – XII	- Direct and Indirect Speech-Transformation of sentences- Active and passive voice.

BLOCK IV: DEVELOPING WRITING SKILLS

Unit – XIII	- Letter writing - Precis writing - Developing hints.
Unit – XIV	- Dialogue writing - Paragraph writing.

References:

1. Sebastian D K, Prose for the Young Reader, Macmillan.
2. Active English Grammar, Ed. by the Board of Editors, Macmillan.
3. Modern English – A Book of Grammar Usage and Composition by N.Krishnaswamy, Macmillan Publishers.

Course Code	Title of the Course
13013	Programming in C

Course Objectives:

- To provide an overview of working principles of C language.
- To understand and apply the functions, arrays, pointers.
- To implement the features of C language in real world applications

Course Outcome:

- Able to understand the C programming techniques

Unit No.	Contents
BLOCK 1: INTRODUCTION	
1	Introduction and Features: History of C, Importance of C, Basic Structure of C program, character set, Tokens, keywords and identifiers
2	Constants and variables and data types: declaration of variables, defining symbolic constants, declaring a variable as a constant
3	Operators and expressions: arithmetic, relational, logical, assignment operators, arithmetic expression, Evaluation of expressions, precedence of arithmetic operators
BLOCK 2 : I/O OPERATIONS AND DECISION MAKING	
4	Managing I/O operations: reading and writing a character, formatted input, output
5	Decision making and branching: IF statement, If..else statement, nesting if else statement, else if ladder, switch statement, goto statement, while statement, do statement, for statement
6	arrays: one-dimensional arrays, declaration, initialization, two dimensional arrays, multi dimensional arrays, dynamic arrays
7	Strings : Declaration, Initialization of string variables, reading and writing strings, string handling functions
BLOCK 3 : USER DEFINED FUNCTIONS	
8	Functions basics: Elements of user defined functions, definitions, return values and their types, function calls, declaration, nesting of functions, recursion
9	Structures and Unions: Defining a structure, declaring a structure variable, accessing structure members, array of structures, array within structures, structures within structures, structures and functions
BLOCK 4 : POINTERS	
10	pointers: Basics, declaring, initialization of pointer variables, address of variable, accessing a variable through its pointer
11	Pointer as Functions: Chain of pointers, pointer increments and scale factors
12	Strings with Pointer: pointers and character strings, pointers and structures
BLOCK 5 : FILES	
13	Introduction: Introduction, Defining, opening and closing files, I/O operations on files
14	Error Handling methods: Error Handling during I/O operations, command line arguments

TEXT BOOK:

1. Programming with C, Schaum outline series, Gottfried, TataMcHill,2006
2. Programming with ANSI and Turbo C, Ashok N Kamthane, Pearson Education, 2006

REFERENCE BOOK:

1. C: The complete reference,H Schildt, TMH Edition, 2000
2. Kanetkar, Let Us C, BPB publications, 1999.

Course Code	Title of the Course
13014	Lab : Programming in C

Course Objectives

- To be able to solve real world problems using C language
- To learn and implement C language programming techniques

Course Outcome

- Students can develop programming knowledge
- Students can solve any kind of problems using C language

Unit No.	Contents
BLOCK 1: C PROGRAM FUNDAMENTALS	
1	Simple C programs
2	Using IF and switch constructs programs
3	Looping related problems
BLOCK 2 : FUNCTIONS, ARRAYS, STRINGS	
4	Programs using functions
5	IF statement, If..else statement, nesting if else statement, else if ladder, switch statement, goto statement, while statement, do statement, for statement
6	One-dimensional arrays, two dimensional arrays, multi dimensional arrays
7	Initialization of string variables, reading and writing strings, string handling functions
BLOCK 3 : STRUCTURE AND UNIONS	
8	Programs using structures
9	Programs using unions
BLOCK 4 : POINTERS	
10	Initialization of pointer variables, address of variable, accessing a variable through its pointer
11	Pointer as Functions
12	Strings with Pointer: pointers and character strings, pointers and structures
BLOCK 5 : FILES	
13	Programs based on file handling
14	Error Handling methods: Error Handling during I/O operations, command line arguments

II SEMESTER

Course Code	Title of the Course
13021 A	Part I: Tamil Paper - II

நோக்கம் : மொழி அறிவு, இலக்கண அறிவை வளர்த்தல்

பிரிவு 1: தேம்பாவணி

கூறு 1

தேம்பாவணி - காட்சிப்படலம்

பாடல் எண் (ஒவ்வொரு பாடலின் முதல்வரி)

14. சொல் தவிர்ந்த
15. அன்னை
16. அஞ்சுவார்
17. சொல்லக் கேட்டனள்
18. மற்செய்கை
19. மண்கணியப்
20. அழுது ஆர்ந்த

கூறு 2

தேம்பாவணி - காட்சிப்படலம்

பாடல் எண் (ஒவ்வொரு பாடலின் முதல்வரி)

21. பொய் பொதுளம்
22. இன்பு அருந்தி
23. வழுதாயின இன்பு
24. மறம் ஏவினர்

கூறு 3

தேம்பாவணி - காட்சிப்படலம்

பாடல் எண் (ஒவ்வொரு பாடலின் முதல்வரி)

25. மண்ணோர்கள்
26. பொய்யா விதியோய்
27. விடியா இருள்
28. அழுவார் எவரும்

பிரிவு 2: சிறுகதை, உரைநடை

கூறு 4

சிறுகதை - நீலபத்மநாபனின் "வான வீதியில்"

கூறு 5

உரைநடை - கம்பன் புறத்திணை - தி.சொக்கலிங்கம்

பிரிவு 3: இலக்கணம் - எழுத்தும் சொல்லும்

கூறு 6

1. முதலெழுத்துகள், சார்பெழுத்துகள்
2. மொழி முதலெழுத்துகள், மொழி இறுதி எழுத்துகள்

Course Code	Title of the Course
13021 B	PART-I : COMMUNICATION SKILLS - II

Learning objectives:

1. To make students understand the basic skills of Communication.
2. To acquaint students with the important features of Communication skills.

BLOCK I: INTRODUCTION TO COMMUNICATION SKILLS

- Unit – I** Code and Content of Communication Skills
Unit– II Stimulus and Response of Communication Skills

BLOCK II: SPEAKING SKILLS

- Unit – III** Effective Speaking Guidelines
Unit – IV Pronunciation Etiquette of Communication Skills
Unit – V Phonetics in Communication Skills

BLOCK III: LANGUAGE SKILLS

- Unit – VI** A self Assessment of Communicating Soft Skills
Unit – VII Language Skills –Ability –Skill Selected Need- Learner Centre activities
Unit – VIII Listening Skills –Importance –Types of Listening- Interview Skills
Unit – IX Conversation Skills –Modes
Unit – X Presentation Skills - Preparing –Planning-Presentation

BLOCK IV: WRITING SKILLS

- Unit – XI** Written Communication –Structure of Effective Sentences –Paragraph
Unit – XII Technical Writing-Creative Writing- Editing and Publishing
Unit – XIII Corporate Communication Skills-Internal –Effective business writing – Letters, Proposals, Resume
Unit – XIV Corporal Communication Skills-External - Press release - Newsletters- Interviewing skills

References:

1. Dutt. Kiranmai & Geeta Rajjevan. Basic Communication Skills. Rev.ed. Foundation Books Pvt.Ltd. Cambridge House, New Delhi 2006.
2. Bill R. Swetmon. Communication Skills for the 21st Century. Chennai: Eswar Press. First South Asian Edition 2006.
3. Glass. Lillian. Talk to Win. New York: Perigee Books,1987.
4. Pease. Alan. Signals: How to Use Body Language for Power, Success and Love, New York: Bantam Books, 1981.
5. Walters. Lilly. Secrets of Successful Speakers. New York: McGraw-Hill, Inc., 1993.
6. Mandal. S.K. How to Succeed in Group Discussions & Personal Interviews. Mumbai: JAICO Publishing House.
7. Rogoff. Leonard and Ballenger. Grady. Office Guide to Business Letters, Memos & Reports. New York: Macmillan, 1994.
8. Krishna Mohan & Meera Banerjee, Developing Communication Skills, 2005.
9. Geetha Nagaraj, Write to Communicate, 2004.
10. Wren & Martin, English Grammar and Composition, 2002.
11. Rajendra Pal and Kortahalli J S, Essentials of Business Communication.

Course Code	Title of the Course
13022	Part II: English Paper- II

Learning objective:

1. To make the students master the different topics prescribed in the Poetry and Language use Sections.

BLOCK I: POETRY - I

Unit – I Sonnet - William Shakespeare

Unit – II Lines Composed upon Westminster Bridge -William Wordsworth

Unit – III Grecian Urn - John Keats (1795-1827)

Unit – IV Andrea Del Sarto - Robert Browning (1812-1889)

BLOCK II: POETRY - II

Unit – V The Road Not Taken - Robert Frost (1874-1963)

Unit – VI Strange Meeting - Wilfred Owen (1813-1918)

Unit – VII Gitanjali - Rabindranath Tagore (1861-1946)

Unit – VIII The Coromandel Fishers - Sarojini Naidu

Unit – IX The Express - Stephen Spender

BLOCK III: DRAMA

Unit – X **Shakespeare** : The Merchant of Venice

BLOCK IV: DEVELOPING LANGUAGE SKILLS

Unit – XI Essay writing

Unit – XII Note Making

Unit – XIII Report writing

Unit – XIV Comprehension

References:

1. The Golden Quill, P.K. Seshadri, Macmillan.
2. The Merchant of Venice, Shakespeare. (Any overseas edition).
3. Active English Grammar, Ed. by the Board of Editors, Macmillan.
4. Modern English – A Book of Grammar Usage and Composition by N.Krishnaswamy, Macmillan Publishers.

Course Code	Title of the Course
13023	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
- Able to write real world problems with C++

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
10	Generic Programming with Templates: Introduction - class templates – class template with multiple arguments
11	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, Robert Lafore, Galgotia Publications Pvt. Ltd., New Delhi. 2010.

Course Code	Title of the Course
13024	LAB: OBJECT ORIENTED PROGRAMMING and C++

Course Objectives:

- To understand and apply the OOPs fundamentals
- To implement the features of OOP in real world applications

Course Outcome:

- Able to write real world problems with C++

Unit No.	Contents
	BLOCK 1: INTRODUCTION
1	Writing simple C++ programs
2	Using if and switch constructs Programs
3	Looping , Arrays ,Structure statements: for, while, do-while, Strings and Matrices Programs Problems
	BLOCK 2 : OOPs CONCEPT
4	Functions: static function, friend function ,constructor , destructor and operator overloading and Recursive programs
5	Inheritance : Inheritance types
6	Polymorphism : polymorphism types, Virtual function
	BLOCK 3 : FILE AND POINTERS
7	File: File Handling C++ Programs, opening and closing a data file - creating a data file, processing a data file.
8	Pointers : Pointers and Pointers with Arrays Programs
9	Virtual functions: Pure virtual functions
	BLOCK 4 : TEMPLATES AND FILES
10	Generic Programming with Templates: Demonstrating class templates, class template with multiple arguments
11	Function template: Demonstrating function template with multiple arguments. Inheritance of class template.
12	Streams with Files: 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: programs using exception handling, 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.

III SEMESTER

Course Code	Title of the Course
13031 A	Part I: Tamil Paper- III

நோக்கம் : மொழி அறிவு, இலக்கண அறிவை வளர்த்தல்

பிரிவு 1: இலக்கியம் - 1

கூறு 1: பத்துப்பாட்டு - முல்லைப்பாட்டு

கூறு 2: எட்டுத்தொகை - ஐங்குறுநூறு

கூறு 3: கபிலர் - குறிஞ்சித்திணை

கூறு 4: மஞ்சைப்பத்து - முதல் மூன்று பாடல்கள்

கூறு 5: குறுந்தொகை - பரணர் பாடல்கள் பா. எண். 19, 24, 36, 128, 399

பிரிவு 2: இலக்கியம் - 2

கூறு 6: நற்றிணை - பெருங்குன்றுர்கிழார் - பா. எண். 5

பெருவழுதியார் - பா. எண். 55

பெருங்கௌசிகனார் - பா. எண். 139

கூறு 7: நற்றிணை - கருவூர்க்கோசிகனார் - பா. எண். 214

உலோச்சனார் - பா. எண் 249

கூறு 8: அகநானூறு - சேந்தம்பூதனார் பாடல்கள் பா.எண். 84, 207

கூறு 9: புறநானூறு - மறோக்கத்து நப்பசலையார் பாடல்கள்

பா. எண். 37, 39, 126, 226, 280

பிரிவு 3: பதினெண்கீழ்க்கணக்கு

கூறு 10: பதினெண் கீழ்க்கணக்கு - திருக்குறள் - வாழ்க்கைத் துணை நலம் (6),

அறிவுடைமை (43), பிரிவாற்றாமை (116)

கூறு 11: நான்மணிக்கடிகை - எள்ளற்க (3), பறைபடவாழா (4),

கூறு 12: நான்மணிக்கடிகை - மண்ணயறிப (5), கள்ளிவயிற்றில் (6), கல்லிற்பிறக்கும்(7)

பிரிவு 4: நாடகம் - புதினம்

கூறு 13: நாடகம் - இராசராசசோழன் - அரு. இராமநாதன்

கூறு 14: நாவல் - சுவடுகள் - இரா. பாலசுப்பிரமணியன், சத்யா வெளியீடு, மதுரை.

Course Code	Title of the Course
13031B	PART-I : HUMAN SKILLS DEVELOPMENT - I

Learning objective:

1. To Make the Students develop human skills.

BLOCK I: HUMAN SKILLS AND HABITS

Unit – I Human Skills –Developing skills-Types

Unit – II Mind-Levels of functions

Habits-Meaning-Types-Merits of good habits - Interpersonal Relationship-Features- Interpersonal Behaviour

BLOCK II: PERSONALITY AND SELF CONCEPT

Unit – III Thinking ahead- Significance of thinking ahead

Unit – IV Developing Personality-Meaning -Need- Factors influencing personality, Ways of developing personality -Building positive personality

Unit – V Self-concept-Self-esteem-Meaning-Importance - Self- efficacy-Self-acceptance-Meaning-Importance - Etiquette-Meaning-Etiquettes in using mobile, telephones-Dais Etiquette

BLOCK III: TYPES OF SKILLS

Unit – VI Goal-setting Skills-Meaning-Types-Importance-

Unit – VII Decision-making skills-Meaning-Types-Steps in decision-making

Unit–VIII Negotiating Skills-Styles-Structure-Creating negotiation-Competitive Negotiation

BLOCK IV: HUMAN RELATIONS

Unit – IX Attitudes-Meaning-Types-Importance-Developing positive attitudes

Unit – X Coping with Change-Meaning-Characteristics-Importance of change
Resistance to change-Dealing with change

Unit – XI Leadership-Meaning-Importance-Characteristics-Styles-

Unit – XII Human Relations Skill-Need-Canons of good human relations

Unit – XIII Counselling-Meaning-Importance-Forms- Conflicts-Meaning-Types-
Causes-Effects-Managements of conflicts

Unit – XIV Stress-Meaning-Types-Causes-Effects-Managing the stress - Anger-
Meaning-Causes-Consequences-Anger Management

References:

1. Les Giblin, Skill with People, 1995.
2. Shiv Khera, You Can Win, 2002.
3. Christian H Godefroy, Mind Power.
4. Dale Carnegie, How to Enjoy Your Life and Your Job, 1985.
5. Natalie H Rogers, How to Speak without Fear, 1982.
6. Dale Carnegie, How to Develop Self-Confidence and Influence People by Public Speaking.

Course Code	Title of the Course
13032	Part II: English Paper- III

Learning objective:

- To make the students master the different topics prescribed in the Short Stories, One Act Plays, Grammar and Composition.

BLOCK I: SHORT STORIES

Unit – I	A Hero	- R.K. Narayanan
Unit – II	The Diamond Necklace	- Guy de Maupassant
Unit – III	The Verger	- Somerset Maugham
Unit – IV	The Postmaster	- Rabindranath Tagore

BLOCK II: ONE ACT PLAYS - I

Unit – V	The Proposal	- Anton Chekhov
Unit – VI	The Boy Comes Home	- A.A. Milne
Unit – VII	The Silver Idol	- James R. Waugh
Unit – VIII	Progress	- St. John Ervine

BLOCK III: ONE ACT PLAYS - II

Unit – IX	The Pie and the Tart	- Hume Chesterman
Unit – X	Reunion	- W.st. Joh Tayleur
Unit – XI	A kind of Justice	- Margaret Wood
Unit – XII	The Refugee	- Asif Currimbhoy

BLOCK IV: GRAMMAR AND COMPOSITION

Unit – XIII	Parts of speech-Noun- Pronoun- Adjective Degrees of Comparison- Verb- Adverb
Unit – XIV	Agenda- Minutes- Notice- Descriptive Writing

References:

1. Aroma, Ed. by the Board of Editors, Publishers- New Century Book House, Chennai.
2. Six Short Stories, Ed. by the Board of Editors, Harrows Publications, Chennai.
3. One Act Plays, Ed. by the Board of Editors, Harrows Publications, Chennai.
4. Modern English – A Book of Grammar Usage and Composition by N.Krishnaswamy, Macmillan Publishers.
5. English for Communication, Ed. by the Board of Editors, Harrows Publications, Chennai.

Course Code	Title of the Course
13033	DATA STRUCTURES 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
13034	Lab : Data Structures and Algorithms

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 No.	Contents
	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 o Dijkstra's Algorithm o Graphs with Negative Edge costs o Acyclic Graphs o All Pairs Shortest Paths Algorithm Minimum cost Spanning Trees o Kruskal's Algorithm o Prims's Algorithm o Applications <input type="checkbox"/> Breadth First Search
	BLOCK 5 : SEARCHING AND SORTING ALGORITHMS
13	Searching Techniques: Linear and Binary search Programs

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 IV

Course Code	Title of the Course
13041 A	Part I: Tamil Paper - IV

நோக்கம் : மொழி அறிவு, இலக்கண அறிவை வளர்த்தல்

பிரிவு 1: செய்யுள் உறுப்புகள்

- கூறு 1: செய்யுள் உறுப்புகள் - யாப்பு - எழுத்து, அசை, சீர்,
கூறு 2: செய்யுள் உறுப்புகள் - யாப்பு - தளை, அடி, தொடை
கூறு 3: வெண்பா, ஆசிரியப்பா, கலிப்பா, வஞ்சிப்பா,
கூறு 4: புதிய யாப்பு வடிவங்கள் - சிந்து, கண்ணி, கீர்த்தனை
கூறு 5: புதுக்கவிதையில் குறியீடு - படிமம்.

பிரிவு 2: அகப்பொருள் - புறப்பொருள்

- கூறு 6: அகப்பொருள் - புறப்பொருள் - ஐந்திணை விளக்கம்
கூறு 7: அகப்பொருள் துறைகள் - வரைவு கடாதல், அறத்தொடு நிறறல்,
உடன்போக்கு
கூறு 8: புறப்பொருள் துறைகள் - வஞ்சினக்காஞ்சி, கையறுநிலை, செவியறிவுறூஉ

பிரிவு 3: அணி

- கூறு 9: அணி இலக்கணம் - உவமை, உருவகம், வேற்றுமை, பிறிது மொழிதல்,
தற்குறிப்பேற்றம், சிலேடை, பின்வருநிலை.
கூறு 10: நிறுத்தல் குறிகள்.

பிரிவு 4: காப்பியம் - சங்க இலக்கியம்

- கூறு 11: தொல்காப்பியம் - சங்கஇலக்கியம் - எட்டுத்தொகை, பத்துப்பாட்டு,
கூறு 12: பதினெண்கீழ்க்கணக்கு.
கூறு 13: ஐம்பெருங்காப்பியங்கள் - பிற்காலக் காப்பியங்கள் - கம்பராமாயணம் -
பெரியபுராணம்.
கூறு 14: இக்காலக் காப்பியங்கள் - பாரதியின் பாஞ்சாலி சபதம் - பாரதிதாசனின்
பாண்டியன் பரிசு - கண்ணதாசனின் இயேசு காவியம் , சிற்பியின் - மௌன
மயக்கங்கள்.

Course Code	Title of the Course
13041 B	PART-I : HUMAN SKILLS DEVELOPMENT - II

Learning objective:

1. To Make the Students develop human skills.

BLOCK I: GUIDENCE AND COUNSELLING

Unit – I Guidance & Counselling – Role of Counsellor - Importance and Techniques of counselling

Unit – II Managerial skill- Need – Importance

Unit – III Human relational skills-Communication-Attention

BLOCK II: TECHNICAL SKILLS

Unit – IV Conceptual skills-Meaning-Importance

Unit – V Technical skills-Techniques-Practices-Tools-Procedures

Unit – VI Presentation skills-Planning-Preparation-Delivery

Unit – VII Organization skills-Meaning-Nature-Importance-Types

Unit – VIII Multi-Tasking skills Responsibilities-Causes

Unit – IX Leader- Qualities of a good leader

BLOCK III: UNDERSTANDING SKILLS

Unit – X Understanding Skills -Human systems: Individual, Group, organization, and their major interactions

Unit – XI Understanding Skills -Human systems: Community and Society, and their major interactions

BLOCK IV: SOCIETY BASED SKILLS

Unit – XII Problem solving skills – Handling –Facing - Importance

Unit – XIII Cooperative Learning Skills

Unit – XIV Making Social Responsibilities-Causes

References:

1. Les Giblin, Skill with People, 1995.
2. Shiv Khera, You Can Win, 2002.
3. Christian H Godefroy, Mind Power.
4. Dale Carnegie, How to Enjoy Your Life and Your Job, 1985.
5. Natalie H Rogers, How to Speak without Fear, 1982.
6. Dale Carnegie, How to Develop Self-Confidence and Influence People by Public Speaking.

Course Code	Title of the Course
13042	Part II: English Paper - IV

Learning objective:

- To make the students master the different topics prescribed in the Short Stories, Drama, Fiction, Tales from Shakespeare, Biographies, Grammar and Composition.

BLOCK I: SHORT STORIES

- Unit – I** Lalajee - Jim Corbett
Unit – II A Day’s Wait - Hemmingway
Unit – III Two old Men - Leo Tolstoy
Unit –IV Little Girls wiser than - Men Tolstoy
Unit – V Boy who wanted more Cheese - William Elliot Griffir

BLOCK II: DRAMA AND FICTION

- Unit – VI** Pygmalion - G.B. Shaw
Unit – VII Swami and Friends - R.K. Narayanan

BLOCK III: SHAKESPEARE

- Unit – VIII** - The Merchant of Venice
Unit – IX - Romeo and Juliet
Unit – X - The Winter’s Tale

BLOCK IV: BIOGRAPHIES, GRAMMAR AND COMPOSITION

- Unit – XI** - Martin-Luther king - R.N. Roy
Unit – XII - Nehru - A.J. Toynbee
Unit – XIII - Concord- Phrases and Clauses-Question Tag
Unit – XIV - Expansion of Proverbs

Group Discussion

Conversation (Apologizing, Requesting, Thanking)

References:

1. Sizzlers, by the Board of Editors, Publishers:-Manimekala Publishing House, Madurai.
2. Pygmalion – G.B. Shaw
3. Swami and Friends – R.K. Narayan
4. Tales from Shakespeare Ed. by the Board of Editors, Harrows Publications, Chennai.
5. Modern English – A Book of Grammar Usage and Composition by N.Krishnaswamy, Macmillan Publishers.

Course Code	Title of the Course
13043	JAVA PROGRAMMING

Course objective

- To understand the basics of Java programming
- To understand Java packages, multithreaded programming

Course outcome

- Able to learn, write Java programs
- Able to develop applets graphics programs

Unit No	Contents
	BLOCK 1 INTRODUCTION
1	Java Evolution: Java history, features, java and Internet, WWW, web browsers
2	Overview : <i>simple java program, program structure, tokens, statements</i>
3	Writing Java programs: JVM, constants, variables, data types, type casting
	BLOCK 2 : OPERATORS AND EXPRESSIONS
4	Operators : arithmetic, relational, logical, assignment, increment and decrement, conditional, bitwise, special operators
5	Expressions : arithmetic, Evaluation of expression, operator precedence and associatively
6	Decision making and branching: If, If..Else, nesting of If..Else, else..if, switch, ? Operators, while..do, for jump in loops
	BLOCK 3 : CLASSES,OBJECTS
7	Defining a class: adding variables, methods, creating objects, accessing members, constructors, method overloading, nesting of methods, inheritance, overriding methods, final classes
8	Arrays, strings and vectors: arrays, one dimensional arrays, two dimensional arrays, strings, vectors, wrapper classes
9	Interfaces : multiple inheritance, defining interfaces, extending interfaces, implementing interfaces, accessing interface variables
	BLOCK 4 PACKAGES AND MULTITHREADED PROGRAMMING
10	API packages : using system packages, naming conventions, creating packages, accessing packages, using a package, adding a class to a package
11	Basics : creating threads, extending the thread class, stopping and blocking a thread, life cycle of a thread, using thread methods, thread exceptions, synchronization, implementing the 'Runnable' interface
12	Managing Errors : types of errors, exception handling code, multiple catch statements, using finally statement
	BLOCK 5 APPLLET AND GRAPHICS PROGRAMMING
13	INTRODUCTION: preparing to write applets, applet life cycle, applet tag, adding applet to a HTML file, running the applet
14	The Graphics class: lines and rectangles, circles and ellipses, drawing arcs, drawing polygons, line graphs

Course Code	Title of the Course
13044	LAB : JAVA PROGRAMMING

Course Objectives:

To understand and apply the fundamentals of Java, Packages

Course requirement

Basic knowledge in programming principles

Course outcomes

- Able to create, test and run Java programs
- Able to write applet programs

Unit No	Contents
	BLOCK 1 JAVA FUNDAMENTALS
1	Simple Java programs
2	Programs using classes and objects
3	Conditional statements using Java
4	Looping statements using Java
	BLOCK 2 : OOP CONCEPTS
5	Operator overloading programs
6	Function overloading programs
7	Inheritance, packages
8	Polymorphism and message passing programs
	BLOCK 3 : VIRTUAL FUNCTION & THREADS
9	Threads
10	Virtual functions
	BLOCK 4 : I/O AND EXCEPTION HANDLING
11	Exception handling programs
12	I/O manipulation programs
	BLOCK 5 : APPLET AND NETWORK PROGRAMMING
13	Simple applet programs
14	Simple network programs using Java

SEMESTER V

Course Code	Title of the Course
13051	OPERATING SYSTEMS

Course objective

- To understand the operating system basics
- To understand the real and virtual memory management

Course outcome

- Able to know the memory organization, memory management
- Able to file and disk management

Unit No	Contents
	BLOCK 1 INTRODUCTION
1	Introduction, components and goals, operating system architecture
2	Process concepts: Introduction, process states, process management
3	Interrupts, Interprocess communication
	BLOCK 2 : ASYNCHRONOUS CONCURRENT EXECUTION
4	Introduction, mutual exclusion, implementing mutual exclusion primitives
5	Software solution to the mutual exclusion problem, hardware solution to mutual exclusion problem, semaphores
6	Concurrent Programming, introduction, monitors
	BLOCK 3 : DEADLOCK AND INFINITE POSTPONEMENT
7	Introduction : Examples of deadlock, Related problem indefinite postponement, resource concepts
8	Conditions for Deadlock: Deadlock solution, prevention, avoidance with Dijkstra's banker algorithm, Deadlock detection, Recovery
9	Processor scheduling: Introduction, scheduling levels, preemptive vs nonpreemptive scheduling priorities, scheduling criteria, scheduling algorithms
	BLOCK 4 REAL MEMORY AND VIRTUAL MEMORY MANAGEMENT
10	Introduction, memory organization, memory management, hierarchy, management strategies
11	Contiguous vs non-contiguous memory allocation, fixed partition multiprogramming, variable partition multiprogramming
12	Virtual memory management Introduction, page replacement, strategies, page fault frequency, page replacement, page release, page size
	BLOCK 5 DISK PERFORMANCE & FILE, DATABASE SYSTEMS
13	Introduction, disk scheduling strategies, rotational optimization
14	File and database system introduction, data hierarchy, files, file systems, file optimization, file allocation, free space management, file access control

Text Book:

1. Operating Systems, Deital&Deital, Pearson Education, Third Edition, 2008

Reference Books

1. An Introduction to operating system concepts and practice, Pramod Chandra, PHI, 2008
2. Operating system concepts, Abraham silberschatz peter Galvin, Wiley India, 2007.

Course Code	Title of the Course
13052	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 : <i>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.</i>
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
13053	COMPUTER ARCHITECTURE

Course objective:

- To understand the computer design
- To understand the addressing modes

Course outcome:

- Able to know the storage devices
- Able to know the memory, I/O cache performance

Unit No	Contents
BLOCK 1 INTRODUCTION	
1	Fundamentals: Measuring and reporting performance, quantitative principles of computer design, classifying instruction set architecture
2	Memory addressing, addressing modes, types and size of operands, operations in the instruction set, operands and operations for media and signal processing
3	Instructions for control flow, Encoding an instruction set, Example architecture, MIPS and TM32
BLOCK 2 : INSTRUCTION LEVEL PARALLELISM	
4	Instruction Level Parallelism: Pipelining and Hazards - Concepts of ILP - Dynamic scheduling
5	Dynamic Hardware prediction - Multiple issues - Hardware based speculation
6	Limitations of ILP - Case studies: IP6 Micro architecture
BLOCK 3 : ILP WITH SOFTWARE APPROACH	
7	Instruction Level Parallelism With Software Approaches: Compiler techniques for exposing ILP - Static branch prediction
8	Static multiple issue : VLIW - Advanced compiler support - Hardware support for exposing parallelism
9	Hardware Vs software speculation. Mechanism - IA 64 and Itanium Processor.
BLOCK 4 MEMORY AND I/O	
10	Memory And I/O: Cache performance - Reducing cache miss penalty and miss rate - Reducing hit time - Main memory and performance - Memory technology
11	Types of storage devices - Buses - RAID - Reliability, availability and dependability
12	I/O performance measures - Designing I/O system.
BLOCK 5 MULTIPROCESSOR AND THREAD LEVEL PARALLELISM	
13	Multiprocessors And Thread Level Parallelism: Symmetric and distributed shared memory architectures - Performance issues - Synchronization
14	Models of memory consistency - Multithreading.

TEXT BOOKS

1. John L. Hennessey and David A. Patterson, " Computer Architecture: A Quantitative Approach", Third Edition, Morgan Kaufmann, 2003.
2. D. Sima, T. Fountain and P. Kacsuk, " Advanced Computer Architectures: A Design Space Approach", Addison Wesley, 2000.

REFERENCE BOOKS

1. Kai Hwang "Advanced computer architecture Parallelism Scalability Programmability" Tata Mcgraw Hill Edition 2001.
2. Vincent P.Heuring, Harry F.Jordan, "Computer System Design and Architecture", Addison Wesley, 2nd Edition 2004.

Course Code	Title of the Course
13054	RELATIONAL DATABASE MANAGEMENT SYSTEMS (RDBMS) LAB

Course objective:

- To understand the SQL commands
- To understand the cursor, triggers, packages

Course outcome:

- Able to write from simple SQL queries to PL/SQL statements
- Able to write database applications using SQL

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

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.

SEMESTER VI

Course Code	Title of the Course
13061	COMPUTER NETWORKS

Course Objectives:

- To understand applications of computer networks
- To provide in-depth knowledge of OSI layer, multiple access protocols

Course Outcome:

- Enhance the perspective of routing algorithms, remote procedure call
- Able to gain the knowledge in network security, symmetric/asymmetric key cryptography.

Unit No.	Contents
BLOCK 1 : INTRODUCTION	
1	Introduction : computer networks applications, line configuration, topology, transmission modes
2	Categories of Networks: LAN, WAN, MAN, OSI layers
3	Physical Layer: analog and digital signals performance, transmission media
BLOCK 2 : DATA LINK LAYER	
4	Introduction: Error detection and correction, block coding, cyclic redundancy check, framing, flow and error control
5	Data link layer protocols: stop and wait protocol, 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 Algorithms: state routing, shortest path routing, dynamic routing, distance vector routing
9	Multicast Routing: algorithms, congestion, control algorithms
BLOCK 4 : TRANSPORT LAYER	
10	introduction: process to process delivery, UDP, TCP, connection oriented vs connection less services
11	Application and Services: Domain Name system, Remote login, Mail exchange, File transfer, RPC, Remote file access, WWW and HTTP, SNMP
BLOCK 5 : NETWORK SECURITY	
12	Introduction: cryptography, Encryption models, Transposition and substitution chipers, Cryptographic principles
13	Symmetric key cryptography: DES, AES
14	Asymmetric key cryptography: RSA, security services

Text Books:

1. Computer Networks, 3rd Edition, Andrew S Tanenbaum, 2010
2. Data Communication and Networking, 4th edition, Behrouz A. Forouzan, 2008

Reference Books:

1. Data and computer communication , 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
13062	VISUAL BASIC PROGRAMMING

Unit No	CONCEPTS
	BLOCK 1: VISUAL BASIC CONCEPTS
1	Introduction to GUI - Visual Basic : Starting and Exiting Visual Basic Project Explorer Working with Forms Properties Window
2	Using the Toolbox Toolbars Working with Projects Programming Structure of Visual Basic applications Event and Event driven Procedures
3	Program Design - Form and Controls - Writing the Code - Saving, Running and Testing - Making EXE File - Printouts
	BLOCK 2 : VISUAL BASIC CODE,EVENTS AND CONTROLS
4	Adding code and using events: Using literals data types - declaring and using variables using the operator subroutines and functions
5	Looping and decision control structures: if then else, structure select structure, for next, do.. loop and while.. wend.
6	Using intrinsic Visual basic Controls with methods and Properties: Label ,Text box, Command button, Frame, Checkbox, option button, List box, Combo box, Drive List box, directory List box and file list box Formatting controls control arrays, Tab order
	BLOCK 3 : VISUAL BASIC PROCEDURES, FUNCTIONS AND ARRAYS
7	Creating Procedures, functions - String functions, date and Time function , numeric functions- Recursive Functions
8	Multiple Forms - Startup Forms - SubMain Procedure
9	Arrays - Control Arrays - Indexing and Event Handling - Graphics
	BLOCK 4 : MENUS AND MDI FORMS
10	Menus: creating menus, adding code to menus
11	Using MDI forms - MDI form basic building MDI form creating MDI Child Forms
	BLOCK 5: DATABASE OBJECT (DAO) AND PROPERTIES
12	Database object (DAO) and properties -accessing Recordset objects- Move first, MoveLast, MovePrevious and MoveNext methods Begin, Commit and Rollback transaction accessing Microsoft Access files.
13	Active Data Objects (ADO) ADO and OLE DB and ADO Primer What are OLE DB and ADO? ADO object Model Converting DAO Code to Use ADO.
14	Connecting to the database Retrieving a recordset Creating a query dynamically Using a parameterized query using action queries - Adding records Editing records closing the database connection.

Text Books

1. Gary Cornwell Visual basic 6 , Tata McGraw Hill

Reference Books:

1. Scott warner Teach yourself Visual basic 6 , Tata McGraw-Hill
2. Noel Jerke The Complete Reference , Tata McGraw-Hill
3. Eric A. Smith, Valar Whisler, and Hank Marquis Visual Basic 6 programming

Course Code	Title of the Course
13063	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
13064	LAB : VISUAL BASIC PROGRAMMING

Course objectives

- To be able to understand the fundamentals of windows GUI
- To be able to run variable applications on windows
- To be able to understand visual Basic Programming concepts

Course outcome

- Students can develop GUI based applications using VB

Unit No.	Contents
1	Building simple applications
2	Working with intrinsic controls ,Control Arrays
3	Application with multiple forms
4	Application with dialogs
5	Application with Menus
6	Application using data controls
7	Application using Common Dialogs
8	Drag and Drop Events
9	Database Management
10	Creating ActiveX Controls
11	Database object (DAO) and properties
12	Active Data Objects (ADO) ADO and OLE DB
13	Connecting to the database ,Retrieving a record set Creating a query dynamically Using a parameterized query using action queries - Adding records Editing records closing the database connection
14	Simple Application development: <ol style="list-style-type: none"> 1. Library information system 2. Students mark sheet processing 3. Telephone directory maintenance 4. Gas booking and delivering 5. Electricity bill processing 6. Bank Transaction 7. Pay roll processing 8. Personal information system 9. Question database and conducting Quiz 10. Personal diary

Text Books

1. Gary Cornwell Visual basic 6 , Tata McGraw Hill

Reference Books:

1. Scott warner Teach yourself Visual basic 6 , Tata McGraw-Hill
2. Noel Jerke The Complete Reference, Tata McGraw-Hill
3. Eric A. Smith, Valar Whisler, and Hank Marquis Visual Basic 6 programming

e.3 Duration of the Programme:

The B.Sc Computer Science programme shall consist of a period of Three years (Six Semesters).

e.4 Faculty and Support Staff Requirements:

The following faculty and support staff is required for this programme.

S.No	Staff Category	Numbers
1	Computer Science Subject Core Faculty*	3
2	Inter-disciplinary Subject Faculty* (Mathematics, Account & Financial Management and Communication Skills)	2
3	Lab Assistant	1
4	Clerical Assistant	1

* Faculty at least in Assistant Professor level

e.5 Instructional Delivery mechanisms

The instructional delivery mechanisms of the programme includes SLM- Study materials, Lab instruction manual, Personal contact session for both theory and practical courses of the programme, e-version of the course materials in the form of CD, e-book, e-tutorials, Massive Open Online Courses (MOOC) courses, Open Educational Resources(OER) and virtual lab.

e.6 Identification of media

The printed version of SLM – study material shall be given to the learners in addition to MOOC, E-tutorial and virtual lab.

e.7 Student Support Services

The student support services will be facilitated by the Directorate of Distance Education, Alagappa University, Karaikudi and its approved learning centres located in various parts of Tamilnadu.

The pre-admission student support services like counseling about the programme including curriculum design, mode of delivery, fee structure and evaluation methods will be explained by the staff at Directorate of Distance Education or Learning centres. The post-admission student support services like issuing Identity card, study materials will be provided thru Directorate or Learning centres. The face to face contact sessions of the programme for both theory and practical's will be held at the Directorate or Learning centres. The student support regarding the conduct of examinations, evaluations, publication of results and certificates done by the Office of the Controller of Examinations, Alagappa University, Karaikudi

(f) Procedure for Admissions, curriculum transaction and evaluation

f.1 Minimum qualification for admission

Candidates for admission to the B.Sc (Computer Science) programme shall be required to have passed the following examinations. Candidates who have passed HSC or 3 year Diploma from recognized institution shall be eligible.

Lateral Entry to II year B.Sc. (CS): 3 year Diploma in Computer Science Engineering, Information Technology, Electronics and Communication Engineering, Electrical and Electronics Engineering

f.2 Curriculum transaction

- The face to face contact sessions in class room teaching with the support of SLM, Power Point Presentations, web based tools, audio and animated videos.
- The practical classes are based on the respective subject study materials containing requirement for the laboratory experiments.
- Face to face contact sessions will be conducted for both theory and practical courses in the following manner.

Course Type	Face to face contact session per semester (in Hours)
Theory courses (3 Courses with 4 credits each)	48
Practical courses (1 Courses with 4 credits each)	120
Total	168

f.3 Evaluation

The examinations shall be conducted separately for theory and practical's to assess the knowledge acquired during the study. There shall be two systems of examinations viz., internal and external examinations. In the case of theory courses, the internal evaluation shall be conducted as Continuous Internal Assessment via. Student assignments preparation and seminar, etc. The internal assessment shall comprise of maximum 25 marks for each course. The end semester examination shall be of three hours duration to each course at the end of each semester. In the case of Practical courses, the internal will be done through continuous assessment of skill in demonstrating the experiments and record or report preparation. The external evaluation consists of an end semester practical examinations which comprise of 75 marks for each course.

Internal assessment

- Internal assessment of theory courses is through home assignment with workbook, case studies, review questions, quiz, multiple choice questions etc., for 25 marks.
- The internal assessment for the practical courses shall be through home assignment which includes workbook designing algorithm, preparing source code, PL/SQL coding etc., for 25 marks.

- The learners should submit home assignment with worksheet for each course (Theory and Practical's) to **The Director, Directorate of Distance Education (DDE), Alagappa University, Karaikudi** Only along with response sheet contains name of the programme, name of the student, enrolment number, course name and subject code.
- Learners should submit home assignments of each courses both theory and practicals at least one month before the commencement of end semester examination of every semester.

Division of Internal Marks (Assignment)

Theory		Practical	
Assignment	Marks	Assignment	Marks
Review questions	15	Algorithm Design	15
Workbook, case studies, multiple choice questions	10	Workbook for preparing source code, PL/SQL coding , results	10
TOTAL	25	TOTAL	25

End Semester Examination

The university end Semester Examinations shall be of three hours duration with maximum of 75 Marks for both theory and practical courses.

Learners shall prepare practical record note book according to the following guidelines; aim, algorithm, source code, input, expected output and result of the experiment and submit during end semester practical examination.

f.3.1 Minimum for a pass:

- For internal Examination, the passing minimum shall be 40% (Forty Percentage) of the maximum marks (25) prescribed for UG and PG Courses.
- For External Examination, the passing minimum shall be 40% (Forty Percentage) of the maximum marks (75) prescribed for UG and PG Courses.
- In the aggregate (External + Internal), the passing minimum shall be 40% for UG and 50% for PG courses.

f.3.2 Question Paper Pattern - Theory

The end semester examination will be conducted in the duration of 3 Hours and maximum of 75 Marks.

Answer ALL questions

One question from each unit from the course syllabi

Part – A (10 x 2 Marks: 20 Marks)

Part – B (5 x 5 Marks: 25 Marks) (Internal Choice)

Part – C (3 x 10 Marks: 30 Marks) (Internal Choice)

f.3.3 Procedure for Completing the Course:

A student shall be permitted to continue the programme from I to II semester irrespective of failure(s) in the courses of the earlier semesters. The candidate will qualify for the B.Sc (CS) degree only if he/she passes all the (including arrears) courses with in a period of FIVE years from the date of admission.

f.3.4 Results and Classification:

Results will be declared at the end of each semester of the University examination and the marks/grade obtained by the candidate will be forwarded to them by the Controller of Examinations, Alagappa University.

f.3.4.1 Marks and grades

The following table gives the marks, grade points, letter, grades and classification to indicate the performance of the candidate

Range of Marks	Grade Points	Letter Grade	Description
90-100	9.0 - 10.00	O	Outstanding
80-89	8.0 - 8.9	D+	Excellent
75-79	7.5 - 7.9	D	Distinction
70-74	7.0 - 7.4	A+	Very Good
60-69	6.0 - 6.9	A	Good
50-59	5.0 - 5.9	B	Average
00-49	0.00	U	Reappear
ABSENT	0.00	AAA	Absent

For a semester

$$\text{Grade Point Average [GPA]} = \frac{\sum C_i G_i}{\sum C_i}$$

Grade Point Average = Sum of the multiplication of Grade points by the credit of the courses

Sum of the credit of the courses in the semester

$$= \frac{\text{Sum of [Credit earned x Grade Points]}}{\text{Sum of the credits earned in the semester}}$$

For the entire programme

$$\text{Cumulative Grade Point Average [CGPA]} = \frac{\sum_n \sum_i C_{ni} G_{ni}}{\sum_n \sum_i C_{ni}}$$

= sum of the multiplication of grade points by the credits of the entire programme

Sum of the credits of the courses for the entire programme

Where

C_i - Credits earned for the course i in any semester

G_i - Grade Point earned for course i in any semester

n - is number of all Courses successfully cleared during the particular semester in the case of GPA and during all the semesters (programme) in the case of CGPA.

CGPA	Grade	Classification of Final Result
9.5 – 10.00	O+	First class – Exemplary*
9.0 and above but below 9.5	O	
8.5 and above but below 9.0	D++	First class with Distinction*

8.0 and above but below 8.5	D+	First Class
7.5 and above but below 8.0	D	
7.0 and above but below 7.5	A++	
6.5 and above but below 7.0	A+	
6.0 and above but below 6.5	A	
5.5 and above but below 6.0	B+	Second Class
5.0 and above but below 5.5	B	
0.0 and above but below 5.0	U	Reappear

* The candidates who have passed in the first appearance and within the prescribed semester

f.4 Fees Structure

Fee Particulars	Amount in (Rs)		
	First Year	Second Year	Third Year
Admission Processing Fees	100	--	--
Course Fees	8,300	8300	8300
ICT fees	150	150	150
Total Fees	8550	8450	8450

The above mentioned fees structure is exclusive of examination fees.

(g) Requirement of the laboratory support and library resources

g.1 Laboratory Support

A well-equipment Computer Laboratory was established in the Alagappa University, Karaikudi with necessary software's as per the practical's syllabi for conducting face to face contact sessions for practical courses of this programme. Model Practical Questions is available to the learners in the university website.

g.2 Library Resources

The Directorate of Distance Education, Alagappa University provides library facility with number of books and Self Learning materials for Computer Science programmes. The Central library of Alagappa University provides the collection of volumes of Self Learning Materials, Printed books, Subscriptions to printed periodicals and Non-book materials in print form for the learner's references. All these library resources are meant for learner's reference purpose only.

(h) Cost estimate of the programme and the provisions:

Expense details	Amount in (Rs.) Approx.
Programme development(Single Time Investment)	20,00,000/-
Programme delivery(Per Year)	24,00,000/-
Programme maintenance	5,00,000/-

(i) Quality assurance mechanism and expected programme outcomes:

i.1 University's Moto:

'Excellence in Action'

i.2 University's Vision and Mission

Vision

Achieving Excellence in all spheres of Education, with particular emphasis on 'PEARL' - Pedagogy, Extension, Administration, Research and Learning.

Mission

Affording a High Quality Higher Education to the learners so that they are transformed into intellectually competent human resources that will help in the uplift of the nation to Educational, Social, Technological, Environmental and Economic Magnificence (ESTEEM).

i.3 University Objectives

1. Providing for instructions and training in such branches of Learning at the university may determine.
2. Fostering Research for the Advancement and Dissemination of Knowledge and Application.

i.4 Quality Policy

Attaining Benchmark Quality in every domain of 'PEARL' to assure Stakeholder Delight through Professionalism exhibited in terms of strong purpose, sincere efforts, steadfast direction and skillful execution.

i.5 Quality Quote

Quality Unleashes Opportunities Towards Excellence (QUOTE).

i.6. Course benchmarks

The benchmark qualities of the programme may be reviewed based on the performance of students in their end semester examinations and number of enrolments of students. Feedback from the alumni, students, parents, stakeholders and employers will be received to analyze the benchmark qualities for the further improvement of the programme.

Minutes of meeting of the Board of Studies(Copy of Letter)

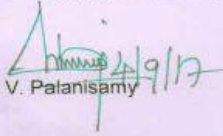
Minutes of the Meeting of the Board of Studies in Computer Science for the Master of Computer Applications (M.C.A), M.Sc(Information Technology), M.Sc. (Computer Science), Post Graduate Diploma in Computer Applications (P.G.D.C.A), Bachelor of Computer Applications (B.C.A), B.Sc (Information Technology), B.Sc. (Computer Science) Programmes to be offered through Open Distance Learning (ODL) Mode held at The Directorate of Distance Education, Alagappa University, Karaikudi – 630 003, on 04.09.2017, (11.00 A.M).

Members Present

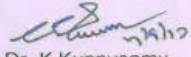
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|----|----------------------|---|-----------------|
| 1. | Dr. V. Palanisamy | - | Chairman |
| 2. | Dr. E.Ramaraj | - | Member |
| 3. | Dr. K.Kuppusamy | - | Member |
| 4. | Dr. T.Meyyappan | - | Member |
| 5. | Dr. S.S.Dhenakaran | - | Member |
| 6. | Dr. K.Mahesh | - | Special Invitee |
| 7. | Dr. A. Padmapriya | - | Special Invitee |
| 8. | Dr. P. Prabhu | - | Member |
| 9. | Mr.S.Balasubramanian | - | Member |

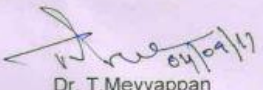
After the deliberation and discussion the board resolved the following:

1. The Board considered the curriculum design and detailed syllabi of Computer Science programmes, prepared as per the norms and the Board scrutinized and necessary modifications are specified.
2. The Board resolved to approve curriculum design, detailed syllabi and other regulations for the Master of Computer Applications (M.C.A), M.Sc(Information Technology), M.Sc. (Computer Science), Post Graduate Diploma in Computer Applications (P.G.D.C.A), Bachelor of Computer Applications (B.C.A), B.Sc (Information Technology), B.Sc. (Computer Science) programmes to be offered from 2018-2019 academic year onwards by the Directorate of Distance Education of Alagappa University, Karaikudi.

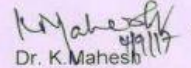

Dr. V. Palanisamy

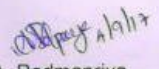

Dr. E. Ramaraj

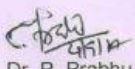

Dr. K. Kuppusamy

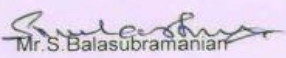

Dr. T. Meyyappan


Dr. S. S. Dhenakaran


Dr. K. Mahesh


Dr. A. Padmapriya


Dr. P. Prabhu


Mr. S. Balasubramanian