ALAGAPPA UNIVERSITY

(A State University Accredited with A+ Grade By NAAC(CGPA:3.64) in the Third Cycle and Graded as Category-I University By MHRD-UGC)
Karaikudi – 630003.
Tamilnadu

Directorate of Distance Education

PROGRAMME PROJECT REPORT

for

Diploma in Computer Applications (DCA)

for seeking approval to introduce programme through Distance Education Mode

July 2020

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Credit Based Curriculum and Evaluation System

ALAGAPPA UNIVERSITY, KARAIKUDI
DIRECTORATE OF DISTANCE EDUCATION

Diploma in Computer Applications (DCA)
Credit Based Curriculum System (CBCS)
(With effect from Academic Year 2020 - 2021 Onwards)

(a) Programme's Mission and Objectives

Mission

Mission is to impart employability and creativity to the Diploma students and lives up to the standards of Computer science, Computer Applications and Information Technology (IT) industry.

Programme Objectives

✓ To offer variety of course specializations due to which multitude of job profiles are created.
✓ To provide excellent career opportunities in various industries including Desk Top Publishing, Web designing, software development companies in the areas of database administration, software testing, education and training etc.
✓ To avail the prospect of going abroad for off-shore development in the top IT companies across the world.
✓ To support employability and career growth prospects for learners are extremely high.

Programme Outcomes

✓ DCA can help in saving a lot of time by covering all the aspects of computer technology in just a year, yet making a student into a professional.
✓ Ability to use current programming languages such that the student produces useful algorithms that solve mathematical, graphical and other structures.
✓ Ability to reason and think in abstract terms, such as object orientation in order to build proper algorithms.
✓ Ability to communicate the fundamentals of computer science both in written form by applying software engineering techniques and verbal forms.
✓ Ability to cross disciplinary lines to abstract and apply CS based solutions in different disciplines.
✓ Facility with the fundamental and mathematical constructions of Information Science, the essential foundation of the discipline.
✓ Understanding of basic computer hardware architecture and be able to design fundamental logic circuits.

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(b) Relevance of the program with HEI's and Alagappa University Mission and Goals

This programme is aligned with HEI's and Alagappa University mission and goals to be offered through distance mode to reach quality higher education to the unreachable and/or rural learners. Higher education in Computer Science offered through distance mode meets the mission of HEI's like digital India and e-cash 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 from various disciplines like Commerce, Mathematics, Physics, Chemistry, Biology, etc. It also includes the learners who want to become entrepreneurs like Web Designers, Office Assistants, Desktop Publishers, Software Developers, BPO's, KPO's etc.,

(d) Appropriateness of programme to be conducted in Open and Distance Learning mode to acquire specific skills and competence;

DCA Programme through Distance Learning mode is developed in order to give subject-specific skills including Knowledge about programming languages, Office Automation, Open Source, Principles of Information Technology, RDBMS, Data Structure and Digital computer fundamentals.

(e) Instructional Design

e.1 Revisions of Regulation and Curriculum Design

1. The University reserves the right to amend or change the regulations, schemes of examinations and syllabi from time to time based on recent market dynamics, industrial developments, research and feedback from stakeholders and learners.

2. Each student should secure 16 credits to complete DCA programme.

3. Each theory and practical course carry 2 credits with 75 marks in the University End Semester Examination (ESE) and 25 marks in the Continuous Internal Assessment (CIA).

Programme code

DCA	517

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Course of Study and Scheme of Examinations

S.No	Course code	Name of the Course	CIA Marks Max.	ESE Marks Max.	Total Marks Max.	C Max. credits
		SEMESTER I				
1	51711	Principles of Information Technology	25	75	100	2
2	51712	Open Source Software	25	75	100	2
3	51713	Office Automation	25	75	100	2
4	51714	Office Automation Lab	25	75	100	2
		TOTAL	**100**	**300**	**400**	**8**
		SEMESTER II				
5	51721	Digital Logic Fundamentals	25	75	100	2
6	51722	Programming in C	25	75	100	2
7	51723	Data Structures and Algorithms	25	75	100	2
8	51724	C and Data Structure Lab	25	75	100	2
		TOTAL	**100**	**300**	**400**	**8**
		GRAND TOTAL	**200**	**600**	**800**	**16**

CIA : Continuous Internal Assessment **ESE :** End semester Examination

Course Code Legend:

X	Y	Z	S	C

XYZ – Programme code for DCA
S   -- Semester Number
C   – Course Number in the Semester

No, of Credits per Course (Theory)   : 2
No. of Credits per Course (Practical)   : 2
Total No. of credits per Semester   :8
Total No. of credits of the programme   : 8 * 2 = 16

e.2 Detailed Syllabi

The detailed Syllabi of study and shall be as shown in Appendix.

e.3 Duration of the Programme:

The DCA programme shall consist of a period of one year (Two Semesters). Maximum duration to complete the course is 2 Years.

e.3.1 Medium of Instruction

- The medium of instruction is only in **English**.
- The course material is also in **English.**

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e.4 Faculty and Support Staff Requirements:

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

S.No	Staff Category	Required
1	Core Faculty	4
2	Laboratory Assistant	1
3	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 e-books, e-tutorials, Power Point Presentation, Video Lectures, sharing of Video Lecture Links , Massive Open Online Courses (MOOC) courses, Open Educational Resources(OER), Google Class room, Social Media 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 centers 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 centers.

The post-admission student support services like issuing Identity card, study materials will be provided thru Directorate or Learning centers. The face to face contact sessions of the programme for both theory and practical's will be held at the Directorate or Learning centers.

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 certificate programme shall be required to have passed HSc or (10+2/10+3) of any Recognized institution or authority accepted by the Syndicate of the Alagappa University as equivalent thereto shall be eligible.

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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, Video Lectures, Video Lecture Links 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 2 credits each) 6 Hrs/Course	18
Practical courses (1 Course with 2 credit) 60 Hrs/course	60
Total	**78**

f.3 Evaluation

There shall be two types of evaluation systems; Internal assessment and End semester examination will be conducted by the University according to the following scheme.

- The maximum marks for the internal assessment for both theory and practical's is 25 marks.
- The maximum marks for end semester examination is 75 marks for each course.
- The candidate failing in any course(s) will be permitted to appear for each failed course(s) in the subsequent examination.

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 flow-chart, source code, PL/SQL coding, model practical examination etc., for 25 marks.
- Student should submit assignment for theory and practical courses of every course and semester.

Division of Internal Marks (Assignment)

Theory		Practical	
Assignment	Marks	Assignment / Model Practical test	Marks
Review questions, Workbook, Case studies, Quiz and multiple choice questions.	25	Workbook for preparing, algorithm/flowchart, source code, PL/SQL coding and results. Model Practical examination.	25
TOTAL	**25**	**TOTAL**	**25**

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End Semester Examination (ESE)

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

f.3.1 Minimum for a pass:

To pass in each course, a candidate is required to secure 40% marks in the End Semester examination and 40% marks in the aggregate (marks in End Semester Examination + marks in Internal Assessment).

The students who does not secure required minimum marks for pass in a course(s) shall be required to reappear and pass the same in the subsequent examination,

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.

All the units must be covered in each part

Part – A (10 x 2 Marks: 20 Marks) Answer all questions

Part – B (5 x 5 Marks: 25 Marks) Answer all questions choosing either (a) or (b)

Part – C (3 x 10 Marks: 30 Marks) (Answer any 3 out of 5 questions)

End Semester Examination (ESE) - Practical

Students are required to prepare a separate lab record for each lab course. The practical counsellor should duly sign this lab record after each session. Students shall prepare practical record note book which includes aim, algorithm, source code, input, expected output and result of the experiment and submit during end semester practical examination.

Division of marks in ESE – Practical (Maximum 75 marks)

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

Practical Evaluation details	Max. Marks
Aim, Algorithm / Flowchart	10
Source Code	20
Debugging	10
Execution	10
Results and Discussion	10
Viva-Voce	5
Record Note	10
Total	**75**

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 DCA only if he/she passes all the (including arrears) courses with in a period of Two 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
40-49	4.0 – 4.9	C	Satisfactory
00-39	0.00	U	Reappear
ABSENT	0.00	AAA	Absent

For a semester

Grade Point Average[GPA] = $\sum C_i G_i / \sum C_i$

GPA = Sum of the multiplication of Grade points by the credit of the courses
        Sum of the credit of the courses in the semester

   = Sum of [Credit earned x Grade Points]
        Sum of the credits earned in the semester

For the entire programme

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

= 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.

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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+	
7.5 and above but below 8.0	D	
7.0 and above but below 7.5	A++	First Class
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	
4.5 and above but below 5.0	C+	Third Class
4.0 and above but below 4.5	C	
0.0 and above but below 4.0	U	Reappear

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

f.4 Fees Structure:

Fee Particulars	Rs.
Admission Processing Fees	100
Course Fees	5200
ICT fees	150
Total Fees	**5450**

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.

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(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 (per year)	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.

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APPENDIX

Detailed Syllabi
SEMESTER I

51711 PRINCIPLES OF INFORMATION TECHNOLOGY

Course Objectives

- To understand the revolution in computers and communications
- To know about various application software
- To understand the information systems and software development

Course Outcome

At the end of the course, students will be able to;
- To know the latest trends in information technology

Unit I :

Information Technology: Introduction – Information systems – Definition of computer and system – Software and Data - IT in business and Industry – IT in the Home and at Play – It in Education and Training – IT in Entertainment and the Arts – IT in Science, Engineering, and Mathematics – Global Positioning System.

Unit II:

Introduction to Computers, History of computers, Types of computers, Characteristics of computers, Basic Anatomy of a computer, Applications of computer – Memory – Memory types.

Unit III:

Software- Kinds of Software - The five types of Applications software - Word processing – Spreadsheets - Database software, Presentation graphics software - Communications software- System Software – Operating system - functions.
Unit IV :

Computer Networks: Introduction – Definition Computer Networks - Types of Networks – Local Area Network – Metropolitan Area Network - Wide Area Network – Personal Area Network - internet – Intranet – firewalls - Network Topology – Bus – Ring – Hybrid – Star.

Unit V:

Basic Internet Concepts: – Analog and Digital Signals - modems and communication Software, ISDN lines, and Cable Modems - Definition of Internet - The World Wide Web - Connecting to the Internet – Browsing the web – Web browser – Uniform Resource Locator (URL) – E-mail communication.

Unit VI :

Internet address - Domain Name System(DNS) – Locating information on the net – Internet Search Engines – Chatting and conferencing on the Internet Online Chatting –Messaging – Usenet Newsgroup.

References:

1. Dennis P.Curtin, Kim dolwy, KunL AWN, Xrhleen morin, Information Technology, the breaking wave, TMH 2000.
2. Stacey C Sawyer, Brain K Williams, Sarah E Hutchinson Using Information Technology – Brief Version A Practical Introduction to Computer and Communications Third Edition, McGraw Hill Companies 2011
3. James O'Brien – Introduction to Information systems. 16th edition, 2005.

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51712 OPEN SOURCE SOFTWARE

Course Objectives:

- To understand the need, advantages and applications of open source software in web designing.
- To know the use of mySQL in database management.
- To be able to create web pages using PHP

Course Outcome

- Attained to know and work with open source software like Linux, MySql,PHP etc in designing web pages.

Unit I :

Introduction to Open sources – Need of Open Sources – Advantages of Open Sources– Application of Open Sources.

Unit II:

Open source operating systems: LINUX: Introduction– General Overview–Kernel Mode and user mode–Process– Advanced Concepts–Scheduling – Personalities – Cloning – Signals – Development with Linux.

Unit III:

MySQL: Introduction Setting up account Starting, terminating and writing your own SQL programs - Record selection Technology– Working with strings – Date and Time

Unit IV:

MySQL: Sorting Query Results – Generating Summary – Working with metadata –Using sequences – MySQL and Web.

Unit V:

PHP: Introduction – Programming in web environment – variables – constants–data types – operators –Statements -Functions– Arrays – OOP –String Manipulation and regular expression –File handling and data storage

Unit VI:

PHP and SQL database – PHP and LDAP – PHP Connectivity –Sending and receiving E-mails –Debugging and error handling – Security – Templates.

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. Steven Holzner, "PHP: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
3. Vikram Vaswani, "MYSQL: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.

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51713 OFFICE AUTOMATION

Objective of the Course:

- To help the students to understand how to format, edit, and print text documents and prepare for desktop publishing.
- Students will be able to create various documents newsletters, brochures, making document using photographs, charts, presentation, documents, drawings and other graphic images.
- To work with the worksheet and presentation software.

Learning Outcomes:

After completion of the course, students would be able to;

- know the basics of computers and prepare documents, spreadsheets, make small presentations with audio, video and graphs and would be acquainted with internet.
- create, edit, save and print documents with list tables, header, footer, graphic, spellchecker, mail merge and grammar checker
- attain the knowledge about spreadsheet with formula, macros spell checker etc.
- go for higher studies such as diploma, bachelors or master's degree in related discipline.

Unit I :

MS-Word: Working with Files – Working with Text – Formatting, Moving, copying and pasting text Styles – Lists – Bulleted and numbered lists, Nested lists, Formatting lists. Table

Manipulations. Graphics – Adding clip Art, add an image from a file, editing graphics, Spelling and Grammar, AutoCorrect - Page formatting, Header and footers, page numbers, Mail Merge, Macros - Creating & Saving web pages, Hyperlinks.

Unit II:

MS-Excel- Modifying a Worksheet – Moving through cells, Adding worksheets, rows and columns Resizing rows and columns, Selecting cells, Moving and copying cells, Freezing panes - Macros – recording and running. Formatting cells – Formatting toolbar, Dates and times, Auto formatting. Formula and Functions. Linking worksheets.

Unit III:

MS-Excel : Sorting and Filling, Alternating text and numbers with Auto fill, Auto filling functions. Graphics – Adding clip art, add an image from a file, Charts – Using chart Wizard, Copy a chart to Microsoft Word.

Unit IV

MS-Power Point -Create a Presentation from a template- Working with Slides – Insert a new slide, Applying a design template, Changing slide layouts -Slides: Reordering slides, Hide slides, Create a Custom slide show. Adding Content – Resizing a text box, Text box properties, Delete a text box. Video and Audio effects, Color Schemes & Backgrounds Adding clip art, Adding an image from a file, Save as a web page.

UNIT V

MS-Access - Using Access database wizard, pages and projects. Creating Tables – Create a Table in design view. Datasheet Records – Adding, Editing, deleting records, Adding and deleting columns Resizing rows and columns, finding data in a table & replacing, Print a datasheet. Queries.

UNIT VI

MS-Access Forms - Forms – Create a form using the wizard, Create a form in Design View. Form Controls. Sub forms-Create a form and sub form at once, Sub form wizard, Drag and drop method. Reports – Using the wizard, Create in Design View, Printing reports. Importing, Exporting, Linking.

REFERENCE BOOKS:
1. Sanjay Saxena, A First Course in Computers (Based on Windows 8 and MS Office 2013) Vikas Publishing 2015.
2. Jennifer fulton, Sherri Kinkoph, and Joe Kraynak, The Big Basics Book of Microsoft Office 1997, PHI, 1998.
3. Laura Acklen et al, Microsoft Office 97 Professional Essentials, EEE Que E&T, PHI (1998).

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51714 OFFICE AUTOMATION LAB

Objective of the Course:
- To help the students to understand how to format, edit, and print text documents and prepare for desktop publishing.
- Students will be able to create various documents newsletters, brochures, making document using photographs, charts, presentation, documents, drawings and other graphic images.
- To work with the worksheet and presentation software.

Learning Outcomes:
Upon successful completion of this assignment, students will be able to:
- Integrate both graphs and tables created in Microsoft Excel into a laboratory report in Microsoft Word.
- Generate equations, sample calculations, and basic diagrams in Microsoft Word.
- Input experimental data into Microsoft Excel.
- Perform calculations in Microsoft Excel using both manually inputting formulas and built-in functions.
- Generate simple and effective tables and graphs to describe experimental data in MS Excel.
- Properly format and organize a formal laboratory report in Microsoft Word.

Exercises based on MS-Word
- ❖ Working with Text, spell check and grammar
- ❖ Table manipulation
- ❖ Flow chart drawing
- ❖ Mail merge
- ❖ Create organization chart
- ❖ Real-time document preparation (Covering letter, greeting cards, invitation, brochure etc)

Exercises based on MS-Excel
- ❖ Performing arithmetic calculations using worksheet
- ❖ Using functions
- ❖ Using Graphs and charts
- ❖ Soring and filtering

Exercises based on MS-Power Point
- ❖ Designing slides for real time applications
- ❖ Using image, audio and video effects
- ❖ Using Animation and transition
- ❖ Using Wizard
- ❖ Using template

Exercises based on MS Access
Table manipulation
- ❖ Creating, altering and drop tables
- ❖ Inserting values
- ❖ Selecting and calculating values from the table
- ❖ Real-time application development (employee database , student database etc.,)

REFERENCE BOOKS:
1. Sanjay Saxena, A First Course in Computers (Based on Windows 8 and MS Office 2013) Vikas Publishing 2015.
2. Jennifer fulton, Sherri Kinkoph, and Joe Kraynak, The Big Basics Book of Microsoft Office 1997, PHI, 1998.
3. Laura Acklen et al, Microsoft Office 97 Professional Essentials,EEE Que E&T, PHI (1998).

SEMESTER II
51721 DIGITAL LOGIC FUNDAMENTALS

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 Outcome:
After the completion of this course, the student will be able to :
- Basic principles of number system
- Concepts of digital, Boolean and instruction
- Design and realize the functionality of the computer hardware with basic gates and other components using combinational and sequential logic.

Unit I:

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.

Unit II:

Boolean algebra and Combinational Circuits: Fundamental concepts of Boolean Algebra – DeMorgan's theorems.

Unit III:

Simplification of expressions – Sum of products and products of sums – Karnaugh map simplification – Quine - McKluskey method – two level implementation of Combinational Circuits.

Unit IV:

Combinational Circuits: Half Adder – Full Adder – Subtractors – Decoders – Encoders – Multiplexers – Demultiplexer.

Unit V:

Sequential Circuits: Flip flops – Registers – Shift Registers – Binary Counters – BCD Counters – Memory Unit.

Unit VI:

Data Representation : Data Types – Complements – Fixed Point Representations – Floating Point Representations – Other Binary Codes – Error detection codes.

Reference 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.
3. Digital fundamentals, Floyd & Jain, eighth edition, 2005, Pearson Education.
4. Digital Principles and applications, Donald P leach, Albert Paul Malvino, Goutam saha, Sixth edition, Tata McGraw Hill,2006.

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51722 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:
At the end of the course, student will be able to:
- understand the C programming techniques
- solve the real-time problems using programming constructs

Unit I:

Introduction and Features: History of C, Importance of C, Basic Structure of C program, character set, Tokens, keywords and identifiers - Constants and variables and data types - declaration of variables, defining symbolic constants, declaring a variable as a constant - Operators and expressions: Evaluation of expressions, precedence of arithmetic operators.

Unit II:

Managing I/O operations: reading and writing a character, formatted input, output - 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.

Unit III:

Arrays: one-dimensional arrays, declaration, initialization, two dimensional arrays, multi-dimensional arrays, dynamic arrays. Strings : Declaration, Initialization of string variables, reading and writing strings, string handling functions.

Unit IV:

Functions basics: Elements of user defined functions, definitions, return values and their types, function calls, declaration, nesting of functions, recursion.

Unit V
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.

Unit VI:

Pointers: Basics, declaring, initialization of pointer variables, address of variable, accessing a variable through its pointer - Files: Introduction, Defining, opening and closing files, I/O operations on files.

Books for Reference
1. Yashavanth Kanetkar, Let Us C, BPB publications, 2016.
2. Programming with C, Schaum outline series, Gottfried, TataMcHill,2010.
3. Programming with ANSI and Turbo C, Ashok N Kamthane, Pearson Education, 2008.
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51723 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;

- 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 I :

Introduction to Data Structure : Types of Data Structure , Primitive data types -Algorithms – Time and space Complexity of algorithms.

Unit II:

Arrays: Array initialization, Definition of Array, Characteristic of Array ,One- dimensional Array, Two-dimensional array and Multi-dimensional array

Unit III:

Stack : Stack related terms, Operations on a stack - Representation of Stack: Implementation of a stack – application of Stack. Expression Evaluation Polish notation. Queues: Operations on queue Circular Queue, Representation of Queues, Application of Queues.

Unit IV:

List: Merging lists, Linked list, Single linked list, Double Linked List, Header - Linked list - Operation on Linked List : Insertion and Deletion of linked list -Traversal: Traversing a linked list , Representation of linked list.

Unit V:
Trees: Binary Trees, Types of Binary trees, Binary Tree Representation - Binary Tree operations / Applications : Traversing Binary Trees, Binary Search tree -Operations on Binary Tree: Insertion and Deletion operations, Hashing Techniques.

Unit VI:

Searching Techniques : Introduction, Searching, Types of searching, Linear Search, Binary search technique.

Books for reference:
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.

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51724 C AND DATA STRUCTURE LAB

Course Objectives

- To be able to solve data structure problems using C language
- To learn and implement C language programming techniques.
- To know about the implementation of data structures

Course Outcome

- Students can develop programming knowledge
- Students can solve any kind of problems using C language
- Data Structure based problems can be solved

Lab Experiments based on C programming and Data Structures

Contents

Simple C Programs
Using if and switch constructs Programs
Looping statements Problems
Functions and Recursive programs
Arrays, Strings and Matrices Programs
File Handling Programs
Pointers and Arrays Programs
Programs using structure and union
Programs based on file handling
Exercises using Stacks
Exercises using queues, expression evaluation programs
Infix to postfix conversion Program
Linked List programs: Single linked list, Double Linked List, Insertion and Deletion of linked list

REFERENCE BOOKS:

1. Programming in ANSI C, Fifth Edition, E.Balagurusamy, Tata McGraw-Hill Publishing Company Ltd, 2011
2. Data Structures, Seymour Lipschutz, G.A.Vijayalakshmi Pai, Second Edition, Schaum's Outlines, Tata Mc-Graw Hill Private Ltd., 2006.
3. Fundamentals of Data structures in C, Second edition, Ellis Horowitz and Sartaj Sahini, Universities press, 2007.
4. Programming and Data Structure, Pearson Edition, Ashok N Kamthane, 2007.

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Minutes of the Meeting of the Board of Studies in Computer Science by circulation to Board Members, for the Diploma in Computer Applications, Certificate Course in Computer Fundamentals, Certificate Course in Web Designing and Certificate Course in C Programming programmes to be offered through Distance Education mode held at the Directorate of Distance Education, Alagappa University, Karaikudi on 29-06-2020 at 3.00 p.m.

MEMBERS PRESENT:

1.	Dr.V.Palanisamy	:	Chairman
2.	Dr.T.Meyyappan	:	Member
3.	Dr.P.Prabhu	:	Member
4.	Mr.S.Balasubramanian	:	Member
5.	Dr.P.Eswaran	:	Member
6.	Dr.P.Thiyagarajan	:	Member
7.	Dr.R.Indra	:	Member
8.	Dr.A.Veera Ravi	:	Ex-Officio 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 Diploma in Computer Applications, Certificate Course in Computer Fundamentals, Certificate Course in Web Designing and Certificate Course in C Programming programmes to be offered from 2020-2021 academic year onwards by the Directorate of Distance Education, Alagappa University, Karaikudi.

Dr.V.PALANISAMY   Dr.T.MEYYAPPAN   Dr.P.PRABHU

Mr.S.BALASUBRAMANIAN   Dr.P.ESWARAN   Dr.P.THIYAGARAJAN

Dr.R.INDRA   Dr.A.VEERA RAVI