THIRUVALLUVAR UNIVERSITY
MASTER OF COMPUTER APPLICATION
CBCS PATTERN
(With effect from 2020 - 2021)

The course of Study and scheme of Examination

S.No	Study Components		Ins. Hrs./ Week	Credit	Title of the Paper	Maximum Marks		
	Course Title					CIA	Uni. Exam	Total
		SEMESTER 1						
1	Core	Paper -1	5	3	Programming in C	25	75	100
2	Core	Paper -2	5	3	Web Design	25	75	100
3	Core	Paper -3	5	3	Data Structures	25	75	100
4	Practical	Paper -1	3	2	Practical 1: Programming in C	25	75	100
5	Practical	Paper -2	3	2	Practical 2: Web Design	25	75	100
6	Practical	Paper -3	3	2	Practical 3: Data Structures using C	25	75	100
				Internal Elective for same major students (Choose any one)				
7	Core Elective	Paper -1	3	3	A. Digital Logic Fundamentals B. Computer Organization and Architecture C. Fundamentals of Microprocessors	25	75	100
				External Major for other major Students (Inter/multi-disciplinary papers)				
8	Open Elective	Paper-1	3	3	A. E-Commerce B. Introduction to Computer Application C. Principles of Internet	25	75	100
			30	21				800
	SEMESTER II					CIA	Uni. Exam	Total
1	Core	Paper-4	5	3	Programming with Java	25	75	100
2	Core	Paper-5	4	3	Relational Database Management System	25	75	100
3	Core	Paper-6	4	3	Open Source Technologies	25	75	100
4	Practical	Paper-4	3	2	Practical 4: Programming with Java	25	75	100
5	Practical	Paper-5	3	2	Practical 5: Relational Database Management System	25	75	100
6	Practical	Paper-6	3	2	Practical 6: Open Source Technologies	25	75	100
				Internal Elective for same major students (Choose any one)				
7	Core Elective	Paper-2	3	3	A. Operation Research B. Graph Theory	25	75	100

					C. Discrete Mathematics			
External Major for other major Students (Inter/multi-disciplinary papers)								
8	Open Elective	Paper-2	3	3	A. Problem Solving Techniques B. Open Source Software C. Principal of Web Design	25	75	100
9	*Field Study		-	2		100	-	100
10	Compulsory Paper		2	2	Human Rights	25	75	100
			30	**25**				**1000**

*Field Study

There will be field study which is compulsory in the first semester of all PG courses with 1 credits. This field study should be related to the subject concerned with social impact. Field and topic should be registered by the students in the first semester of their study along with the name of a mentor before the end of the month of August. The report with problem identification and proposed solution should be written in not less than 25 pages in a standard format and it should be submitted at the end of second semester. The period for undergoing the field study is 30 hours beyond the instructional hours of the respective programme. Students shall consult their mentors within campus and experts outside the campus for selecting the field and topic of the field study. The following members may be nominated for confirming the topic and evaluating the field study report.

i)   Head of the respective department
ii)   Mentor
iii)   One faculty from other department

THIRUVALLUVAR UNIVERSITY

MASTER OF COMPUTER APPLICATION

SYLLABUS

UNDER CBCS

(With effect from 2021-2021)

[SEMESTERI: CORE]   **[Hrs: 5/Credits: 3]**

PROGRAMMING IN C

COURSE OBJECTIVES

- To identifysituations where computational methods and computers would be useful.
- To enhance their analyzing and problem-solving skills and use the same for writing programs in C.
- To develop logics and that will help them to create programs, applications in C.
- To identify programming task involvedin a given computational problem.
- To approachthe programming tasks using techniques learned and writepseudo-code.
- To choosethe right data representation formats based on the requirements of the problem.
- To usethe comparisons and limitations of the various programming constructs and choosethe right one for the task in hand.
- To enter the program on a computer, edit, compile, debug, correct, recompile and run it.
- To identify tasks in which the numerical techniques learned are applicable and apply them to write programs.

UNIT – I: DATA TYPES, OPERATORS
Structure of a C program – Basic data types (int, float, char, double, void) – constants and variables (variable declaration, integer, real,float, character, variables) – operators and expressions (arithmetic operators, relational operators, logical operators, bitwise operators, type casting, type conversion, enumerated data type, typedef) – Control Constructs (if, switch, while, do…while, for, break and continue, exit() function, goto and label).

UNIT – II: ARRAYS AND FUNCTIONS
Arrays (declaration, one and two dimensional arrays) - Character Arrays and Strings. Function Fundamentals (General form, Function Definition, Function arguments, return

value) – Parameter passing: call-by-value and call-by-reference – Recursion – Passing Arrays to Function – Passing Strings to Function.

UNIT – III: POINTERS
Understanding Pointers – Accessing the Address of a Variable – Declaring the Pointer Variables – Initialization of Pointer Variables – Accessing a Variable through its Pointer – Pointer Expressions – Pointers and Arrays – Pointers and Character Strings – Array of Pointers – Pointers as Function Arguments – Functions returning Pointers – Pointers to Functions.

UNIT – IV: STORAGE CLASSES, STRUCTURES AND UNIONS
Scope rules (Local variables and global variables, scope rules of functions) -Type modifiers and storage class specifier.

Structures – Basics of Structure – Declaring of Structure – Referencing Structure elements - Array of Structures – Nesting of Structures - Passing Structures to function – Pointers and Structures - Unions.

UNIT – V: FILE MANAGEMENT IN C
Introduction – Defining and Opening a File – Closing a File – Input / Output Operations on Files – Command Line Arguments.

TEXT BOOK
1. E.Balagurusamy, "Programming in ANSI C", Seventh Edition, McGraw Hill Education Private Limited, NewDelhi: 2017.

REFERENCES
1. YashavantKanetkar, "Let us C", BPB Publications, Tenth Edition - New Delhi: 2010

2. Ashok N.Kamthane, "Programming in C", Second Impression, Pearson: 2012.

WEB REFERENCES

http://www.c4learn.com/?gclid=COK1y6nHk7wCFcUA4godmlgAKA/

http://www.cprogramming.com/tutorial/c-tutorial.html/

http://www.tutorialspoint.com/cprogramming/

COURSE OUTCOMES

After course completion the students will have the following learning outcomes:

- Understanding a functional hierarchical code organization.

- Ability to define and manage data structures based on problem subject domain.

- Ability to work with textual information, characters and strings.

- Ability to work with arrays, structures, pointers and files.

WEB DESIGN

COURSE OBJECTIVES

- To understand the basic of HTML structure, tags, and presentation elements.
- To understand the basic of HTML Images and Links.
- To understand the basic of HTML List and Tables.
- To understand the basic of Frames elements and Forms elements.
- To understand the basic of CSS syntax, Inclusion, Measurement units and various CSS Properties.

UNIT – I: HTML BASICS AND FORMATTING TAGS

HTML Introduction – Web page: Static & Dynamic Page - Web Browsers - HTML Versions - HTML Tags – HTML Elements – HTML Attributes - HTML Editors - HTML Page Structure - HTML Basic tags: Head – Title – Body - Background - Heading tags – Paragraph tag – HR tag - Line break. Presentational Element: Bold – Italic – Underline – Subscripted –Superscripted – Strike through - Emphasized – Strong – Inserted – Deleted. Phrase Elements: Abbreviation – Acronyms - Text Direction - Block quoted - Short quotation – citation – definition - Computer output tags: computer code – keyboard – variable – preformatted.

UNIT – II: IMAGE, LINKS

HTML Images - Src Attribute - Dynsrc Attribute - Alt Attribute - Setting Height and Width of an Image - HTML Links – Hyperlinks – Hyperlinks Syntax - The target attribute – creating image as a link.

UNIT – III: LIST AND TABLE

HTML List: Ordered List – Unordered List – Definition List- HTML Tables: Table attributes (Cell spacing, Cell Padding, Border, Width, Height) - Table Headers – Table Row – Define Table - Caption – Rows span – Cols span.

UNIT – IV: FRAMES AND FORMS

Frames: The Frameset, No Frame Element – Creating Link between Frames – Nested Frameset – Forms. HTML Form: Text Fields – Password Field – Radio Buttons – Checkboxes – Submit Button – Reset Button – Button – Select – option – text area.

UNIT – V: CSS

CSS Introduction – CSS Syntax – Inclusion: External CSS – Internal CSS – Inline CSS – Measurement Units – Color – Background – Font – Text – Color – Images - Links – Tables – Borders – Margin – List – Padding.

TEXT BOOK

1. Jon Ducktt, "Web Programming with HTML, CSS & Java script", Wiley Publishing, New Delhi,2013.

Unit - I	:	Ch. 1
Unit - II	:	Ch. 2, 3
Unit - III	:	Ch. 4
Unit – IV	:	Ch. 5 & 6
Unit – V	:	Ch. 7 & 8

REFERENCES

1. Joel Sklar. Principles of Web Design. Singapore :Thomson Asia Pvt. Ltd, 2000 Powell, Thomas A.
2. Web Design – The Complete Reference. Tata McGraw Hill Edition, 2000.

WEB REFERENCES

Online Tutorial

1. http://www.w3schools.com/html/html_intro.asp
2. http://www.tutorialspoint.com/css

Online Quiz

1. http://www.pskills.org/html.jsp
2. http://www.w3schools.com/quiztest/quiztest.asp?qtest=HTML

Online Compiler

1. https://www.tutorialspoint.com/try_html_online.php
2. https://html-online.com/editor/

COURSE OUTCOMES

Upon successful completion of this course, the students should be able to:
- Develop Website Accessibility.
- Make detailed understanding of the structure of a page with the help of HTML.
- Develop the innovative designing ability in designing web page.
- Understand the basic of HTML List and Tables, frames elements and Forms elements.
- Understand the basic of CSS syntax, Inclusion, Measurement units and various CSS Properties.

DATA STRUCTURES

COURSE OBJECTIVES

- To understand the performance of the implementations of basic linear data structures.
- To understand the various operations of stack and queue.
- To implement the linked data structures such as linked list and binary trees.
- To be familiar with several sorting and searching algorithms.
- To be familiar with some graph algorithms such as shortest path and minimum spanning tree.

UNIT - I: ARRAYS AND LINKED LIST
Arrays: Operations with Array – One dimensional array – Two dimensional arrays – Special Matrices. Linked List: Implementation of List – Linear List Concepts – Insertion, Deletion, Retrieval and traversal – Linked List Concepts – Linked List Algorithms – Circular Linked List – Doubly Linked List.

UNIT - II: STACK AND QUEUES
Stack: Basic Stack Operations – Stack Linked List Implementation – Stack Applications – Reversing Data, Postponement – Infix to Postfix Transformation, Evaluating Postfix Expressions.Queue: Queue operations – Queue Linked List Design – Queuing Theory – Queue Applications- Queue Simulation.

UNIT - III: TREES
Basic Tree Concepts: Terminology – Tree Representation – Binary Trees – Binary Tree Traversal – Expression Trees – Binary Search Trees.

UNIT - IV: SEARCHING AND SORTING
Searching: Hashed List Searches –Basic Concepts – Hashing Methods – Hashing Algorithm – Collision Resolution.Sorting: Internal Sort:Shell Sorts – Quick Sort- Heap Sort. External Sorts: Merging Ordered Files – Merging Unordered Files.
UNIT - V: GRAPHS
Graphs: Terminology – Operations – Graph Storage Structures – Graph Algorithms – Networks – Minimum Spanning Tree – Shortest Path Algorithm.

TEXT BOOK
1. Richard F. Gilberg and Behrouz A. Forouzan,"Data structures: A pseudo code Approach with C++", India Edition, First India Reprint, 2007.

Unit – I	**:**	**Ch 3.1 – 3.3, 3.6**
Unit – II	**:**	**Ch 4.1 – 4.3, 5.1 – 5.4**
Unit – III	**:**	**Ch 7.1 – 7.4, 8.1**
Unit – IV	**:**	**Ch 2.3 – 2.4, 11.2, 11.4, 11.6**
Unit – V	**:**	**Ch 12.1 – 12.5**

REFERENCES

1. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C++", 3rd Edition, Pearson Education, 2006.
2. Ellis Horowitz, Sartaj Sahni and Dinesh Mehta, "Fundamentals of Data Structures in C++", 2nd Edition, Universities Press(India) Pvt.Ltd, 2009.

WEB REFERENCES

Online Tutorial
1. www.cyberdim.com/vin/learn.html
2. www.eecs.wsy.edu
3. www.wrox.com/store/cerfinet.com

Online Quiz
1. https://www.tutorialspoint.com/data_structures_algorithms/data_structures_algorithms_online_quiz.htm
2. http://quiz.geeksforgeeks.org/data-structure/

Online Compiler
1. http://withoutbook.com/OnlineTestStart.php?quizId=2
2. https://www.wiziq.com/online-tests

COURSE OUTCOMES

Upon completion of this course, the students should be able:

- To understand the performance of the implementations of basic linear data structures.
- Understand the various operations of stack and queue.
- Implement the linked data structures such as linked list and binary trees.
- Familiarize with several sorting and searching algorithms.
- Familiarize with some graph algorithms such as shortest path and minimum spanning tree.

PROGRAMMING IN C

1. Data types
2. Operators and Expressions
3. Decision making statement
4. Looping statement
5. Arrays
6. Functions
7. Structures
8. Unions
9. Pointer
10. Files

WEB DESIGN

1. Basic HTML tags

2. Working with Images

3. Text formatting tags

4. Link

5. List

6. Tables

7. Frames

8. HTML Form Controls

9. CSS Inclusion and Properties

10. Internal, external and inline CSS.

DATA STRUCTURES USING C

1. Matrix Representation
2. Sparse Matrix Representation
3. Stack Representation
4. Queue Representation
5. Linked List Representation
6. Doubly Linked List Representation
7. Binary Tree Representation
8. Searching Algorithms
9. Sorting Algorithms
10. Graph Representation

A. DIGITAL LOGIC AND FUNDAMENTALS

COURSE OBJECTIVES

UNIT – I

Number system-converting numbers from one base to another – Complements – binary codes-integrated circuits-Boolean algebra-properties of Boolean algebra -Boolean functions-Canonical and standard form-logic operations-Logic gates-K map up to 6 variables-Don't care condition-Sum of products and product of sum simplification-Tabulation method.

UNIT – II

Adder–subtractor-code converter-Analyzing a combinational Circuit-Multilevel NAND and NOR circuits-properties of XOR and equivalence function-Binary parallel Adder-Decimal Adder –Magnitude Comparator-Decoder-Multiplexer-ROM-PLA.

UNIT – III

Flip flops-Triggering of flip flops-Analyzing a sequential circuit-State Reduction-Excitation tables-Design of sequential circuits-Counters-Design with state equation-Registers-Shift registers-Ripple and Synchronous Counters.

UNIT –IV

Memory unit-Bus Organization-Scratch Pad Memory-ALU-Design of ALU-Status Register-Effects of Output carry-Design of shifter-Processor unit-Microprogramming-Design of Specific Arithmetic Circuits .

UNIT –V

Accumulator-Design of Accumulator-Computer configuration-Instruction and Data formats-Instruction sets-Timing and Control-Execution of Instruction-Design of computer-H/W control-PLA control and Micro program control.

TEXT BOOK

1. M. MorrisMano, "Digital Logic and Computer Design", PHI, 6/E, 2014.

REFERENCES

1. M.M .Mano and C.R.Kime, "Logic and Computer Fundamentals", Pearson 4/E, 2010.
2. Thomas C.Barteel, "Digital Computer Fundamentals", Tata McGraw Hill, 6/E, 2010
3. V. Rajaraman and Radhakrishnan, "Digital logic and Computer Organization", PHI 3/E, 2009

WEB REFERENCES

<http:// https://www.tutorialspoint.com/digital electronics-concepts.htm/>
<http://www.indiabix.com/online-test/digital electronics-test/>

COURSE OUTCOMES

Upon completion of the course, the students will be able to:

- Perform conversions and arithmetic operations in various number systems

- Simplify using laws of Boolean algebra and Karnaugh map method

- Design various combinational and sequential circuits

- Differentiate between various addressing modes

- Trace the flow of execution of an instruction in a processor

B. COMPUTER ORGANIZATION AND ARCHITECTURE

COURSE OBJECTIVES

- To know the basic architecture of computer.
- To understand the organization of a computer system in terms of its main components.
- To understand different processor architectures and understand input/output mechanisms.
- To understand the various parts of a system memory hierarchy.
- To study the different ways of communicating with I/O devices and standard I/O interfaces.

UNIT – I:BASIC COMPUTER ORGANIZATION AND DESIGN

Instruction Codes: Stored Program Organization – Indirect Address - Computer Registers: Common Bus System –Logic Gates - Computer Instructions: Instruction Set Completeness - Timing and Control - Instruction Cycle: Fetch and Decode – Determine the Type of Instruction – Register-Reference Instructions.

UNIT – II:CENTRAL PROCESSING UNIT

General Register Organization : Control Word – Examples of Micro-operations - Instruction Formats : Three-Address, Two-Address, One-Address, Zero-Address and RISC Instructions - Addressing Modes : Example – Data Transfer and Manipulation : Data Transfer Instruction – Data Manipulation Instructions.

UNIT – III:INPUT / OUTPUT ORGANIZATION - I

Peripheral Devices: ASCII Alphanumeric Characters - Input /Output Interface: I/O Bus and Interface Modules – I/O Vs. Memory Bus – Isolated Vs. Memory-Mapped I/O – Example of I/O Interface - Asynchronous Data Transfer: Strobe Control – Handshaking.

UNIT – IV:INPUT / OUTPUT ORGANIZATION - II

Modes of Transfer: Example of Programmed I/O – Interrupt Initiated I/O – Software Considerations - Priority Interrupt: Daisy-Chaining Priority – Parallel Priority Interrupt – Priority Encoder – Interrupt Cycle – Software Routines - Direct Memory Access: DMA Controller – DMA Transfer.

UNIT – V: MEMORY ORGANIZATION

Memory Hierarchy - Main Memory: RAM and ROM Chips – Memory Address Map – Memory Connection to CPU - Auxiliary Memory: Magnetic Disks – Magnetic Tape - Associative Memory: Hardware Organization – Match Logic – Read Operation – Write Operation.

TEXT BOOK

1. Morris Mano M. "Computer System Architecture". New Delhi**:** Prentice Hall of India Private Limited, 2011

REFERENCES

1. William Stallings. "Computer Organization and Architecture". 8th edition. Pearson Publication, 2010

2. Morris Mano. "Digital Login and Computer Design". New Delhi: Prentice Hall of India Private Limited, 2001.

WEB REFERENCES

   Online Tutorial

   1. www.tutorialspoint.com/computer_logical_organization/

\   2.www.tutorialspoint.com/computer_logical_organization/cpu_architecture.html

   3. www.tutorialspoint.com/computer...organization/computer logicalorganization

Online Quiz

   1.www.withoutbook.com/OnlineTestStart.php?quizId=67

COURSE OUTCOMES

Upon completion of this course, the students should be able:

- Know the basic architecture of computer.
- Understand the organization of a computer system in terms of its main components.
- Understand different processor architectures and understand input/output mechanisms.
- Understand the various parts of a system memory hierarchy.
- Study the different ways of communicating with I/O devices and standard I/O interfaces.

C. FUNDAMENTALS OF MICROPROCESSORS

COURSE OBJECTIVES

UNIT – I

8085 MICROPROCESSOR-Introduction to Microprocessor- 8085 Architecture and its operations- 8085 pin description-8085 instruction Set and Classification -8085 addressing modes.

UNIT – II

8085 PROGRAMMING-Writing assembly level Programs -Multi-byte addition- Multibyte Subtraction-BCD addition -BCD subtraction-BCD Multiplication-BCD division – BCD to Binary and Binary to BCD conversion- ASCII to BCD and BCD to ASCII Conversion – ASCII to Binary and Binary to ASCII Conversion.

UNIT – III

Intel 8255 Programmable Peripheral Interface: Features of 8255 – Block diagram of Intel 8255-Operating Modes and control words of 8255 – Programming Examples – Interfacing LEDs – Interfacing Seven Segment Displays – Traffic Light control.

UNIT –IV

Introduction to 8086 Microprocessor- Architecture of 8086 – Pin details of 8086. Advanced Microprocessor: 80186 Architecture - 8086 Architecture – Pentium   Microprocessor: Architecture of Pentium. Other Versions of Pentium: Pentium Pro Processor - Pentium II Processor - Pentium III Processor- Pentium 4 Processor

UNIT –V

8051 MICROCONTROLLER-Introduction to 8051 Microcontroller - Intel's MCS -51 series Microcontrollers - Intel 8051 Architecture –Memory organization – Internal RAM Structure- Power Control in 8051 –Stack operation.

TEXT BOOK

1. Ramesh Goankar "Microprocessors and Microcontroller", Prentice Hall, 5th edition, 2002. (Unit I & Unit II)
2. N.SenthilkumarM.Saravannan, S.Jeevananthan "Microprocessor and Microcontrollers" Oxford University Press, 1/E, 2010 (unit III, Unit IV & Unit V)

REFERENCES

1. Douglas V. Hall "Microprocessors and Interfacing ", Tata McGraw Hill, 2/E, 2006.

2. Krishna kant "Microprocessors and Microcontrollers Architecture Programming and system design 8086,8086,8051,8096, PHI Learning Pvt Ltd. New Delhi, 2/E, 2010.

3. Barry B. Brey, "The Intel Microprocessor-8086/8088, 80186,286, 386, 486, Pentium Processor", Prentice Hall of India Pvt Ltd, 8th Edition, 1998.

4. Yu-chang Lin and Clean, "Microprocessor Systems the 8086/8088 family architecture, Programming and Design", Prentice Hall of India Pvt Ltd, 2nd edition, 2001.

WEB REFERENCES

<http:// https://www.tutorialspoint.com/8085/>
<http://www.indiabix.com/online-test/8085 mup-test/>

COURSE OUTCOMES

Upon completion of the course, the students will be able to:

- Understand the architecture of 8085 and 8051
- Impart the knowledge about the instruction set
- Understand the basic idea about the data transfer schemes and its applications
- To develop skill in simple program writing for 8051 & 8085 and   applications
- Easy to understand 8085 Programming using instruction set

A. E-COMMERCE

COURSE OBJECTIVES
- To demonstrate an understanding of the foundations and importance of E-commerce
- To demonstrate an understanding of retailing in E-commerce by: analyzing branding and pricing strategies, using and determining the effectiveness of market research and assessing the effects of disintermediation.
- To analyze the impact of E-commerce on business models and strategy
- To describe Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational.
- To describe the infrastructure for E-commerce
- To describe the key features of Internet, Intranets and Extranets and explain how they relate to each other.

UNIT – I: E-COMMERCE FUNDAMENTALS
Introduction - The e-commerce environment - The e-commerce marketplace - Focus on portals - Location of trading in the marketplace - Commercial arrangement for transactions - Focus on auctions - Business models for e-commerce - Revenue models - Focus on internet start-up companies -E-business infrastructure: Introduction on Internet - Internet standards - Focus on controls the internet - Managing e-business infrastructure - Focus on web service nd service-oriented - Focus on new access devices.

UNIT – II: E-PROCUREMENT
Introduction - Drivers of e-procurement - Focus on estimating e-procurement cost savings - Risks and impacts of e-procurement - Implementing e-procurement - Focus on electronics B2B marketplaces - The future of e-procurement E-marketing: Introduction - E-marketing planning - Situation analysis - Objective setting – Strategy - Focus on characteristics of new-media marketing communications – Tactics - Focus on online branding – Actions - Control.

UNIT – III: CUSTOMER RELATIONSHIP MANAGEMENT
Introduction:e-CRM-conversion marketing - the online buying process - customer acquisition management - focus on marketing communications for customer acquisition - customer retention management focus on excelling in e- commerce service quality - customer extension - Analysis and design: Introduction - process modeling - Data modeling - Design for e-business - Focus on user centered site design - Focus on security design for e-business.

UNIT – IV: M-COMMERCE
Introduction to m-commerce: Emerging applications - different players in m-commerce - m-commerce life cycle - Mobile financial services - mobile entertainment services - and proactive service management.

UNIT – V: MANAGEMENT OF MOBILE COMMERCE SERVICES
Content development and distribution to hand-held devices - content caching - pricing of mobile commerce services - The emerging issues in mobile commerce: The role of emerging wireless LANs and 3G/4G wireless networks - personalized content management - implementation challenges in m-commerce - futuristic m-commerce services.

TEXT BOOK
1. Dave Chaffey, "E-Business and E-Commerce Management", 3rd Edition, 2009, Pearson Education.

REFERENCES
1. Henry Chan, Raymod Lee and etl., "E-Commerce Fundamental and Applications", Wiley.
2. Brian Mennecke and Troy Strader, "Mobile Commerce: Technology, Theory".
3. Nansi Shi, "Mobile Commerce Applications", IGI Global, 2004.
4. Gary P. Schneider, "Electronic Commerce", 7th Edition, CENGAGE Learning India, New Delhi.
5. K.K. Balaji, D.Nag "E-Commerce", 2nd Edition, Mc Graw Hill Education, New Delhi.
6. P.T.Joseph," E-Commerce an Indian Perspective," PHI Publication, New Delhi.
7. Bhaskar Bharat, "Electronic Commerce – Technology and Application",   McGraw Hill.

WEB REFERENCES
www.feinternational.com/blog/what-is-e-commerce-an-introduction-to-the-industry/
www.abetterlemonadestand.com/what-is-ecommerce/

COURSE OUTCOMES
Upon successful completion of BA 207, Introduction to E-Commerce, the student will be able to:
*   Demonstrate an understanding of the foundations and importance of E-commerce
*   Demonstrate an understanding of retailing in E-commerce by: analyzing branding and pricing strategies, using and determining the effectiveness of market research and assessing the effects of disintermediation.
*   Analyze the impact of E-commerce on business models and strategy
*   Describe Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational.
*   Describe the infrastructure for E-commerce
*   Describe the key features of Internet, Intranets and Extranets and explain how they relate to each other.

B. INTRODUCTION TO COMPUTER APPLICATION

COURSE OBJECTIVES
- To know about computer and basic applications of computer.
- To get knowledge about operating system
- To aim at imparting a basic level appreciation Programme

UNIT I: KNOWING COMPUTER
What is Computer - Basic Applications of Computer - Components of Computer System - Central Processing Unit (CPU) – VDU - Keyboard and Mouse - Other input/output Devices - Computer Memory - Concepts of Hardware and Software - Concept of Computing - Data and Information; Applications of IECT - Connecting keyboard – mouse - monitor and printer to CPU and checking power supply.

UNIT II: OPERATING COMPUTER USING GUI BASED OPERATING SYSTEM
What is an Operating System - Basics of Popular Operating Systems - The User Interface - Using Mouse - Using right Button of the Mouse and Moving Icons on the screen - Use of Common Icons - Status Bar - Using Menu and Menu – selection - Running an Application - Viewing of File - Folders and Directories - Creating and Renaming of files and folders - Opening and closing of different Windows - Using help - Creating Short cuts - Basics of O.S Setup - Common utilities.

UNIT III: UNDERSTANDING WORD PROCESSING
Word Processing Basics - Opening and Closing of documents - Text creation and Manipulation - Formatting of text - Table handling - Spell check -language setting and thesaurus - Printing of word document.

UNIT IV: USING SPREAD SHEET
Basics of Spreadsheet - Manipulation of cells - Formulas and Functions - Editing of Spread Sheet - printing of Spread Sheet.

UNIT V: MAKING SMALL PRESENTATION
Basics of presentation software - Creating Presentation - Preparation and Presentation of Slides - Slide Show - Taking printouts of presentation / handouts.

TEXT BOOK
Introduction to Computer Applications, TNAU, Tamil Nadu.
https://www.agrimoon.com/introduction-to-computer-applications-pdf-book/

WEB REFERENCES
https://homepage.cs.uri.edu/faculty/wolfe/book/Readings/Reading01.htm
https://peda.net/kenya/ass/subjects2/computer-studies/form-1/itc2

COURSE OUTCOMES

After the completion of the course the students will be able:

- Know about computer and basic applications of computer.
- knowledge about operating system
- Aim at imparting a basic level appreciation Programme

C. PRINCIPLES OF INTERNET

COURSE OBJECTIVES
- To learn the basics of Internet.
- To provide fundamental knowledge in WWW

UNIT-I: INTERNET
The wired world of the internet –Information travels across the internet –TCP/IP – Understanding internet addresses and domains –Anatomy of web connections –Internet file types. Internet's Underlying Architecture: Domain name system –Routers –The internet's client/server architecture.

UNIT-II: CONNECTING TO THE INTERNET
Connecting your computer –Connecting to the internet from online services –ISDN –The internet/television connection –Network computers –DSL(Digital Subscriber Line). Communicating on the internet:E-mail–Usenet and newsgroups –Internet chat and instant messaging –Making phone calls on the internet.

UNIT-III: WORLD WIDE WEB

Webpages –Web browsers –Markup Languages –Hypertext –Image maps and interactive forms –Web host servers –Websites with databases. Common Internet Tools:Gophers –Telnet –FTP and downloading files –Searching the internet.

UNIT-IV: MULTIMEDIA ON THE INTERNET
Audio on the internet –Video on the internet –Intranet and shopping on the internet.

UNIT-V: SAFEGUARDING THE INTERNET
Firewalls–Viruses –Digital certificates.

TEXT BOOK
1. Preston Gralla, "How the Internet works", 10thEdition, Que publishers, 2014.

REFERENCES
1. Raj Kamal, "Internet and Web Technologies", Tata Mc Graw Hill, 2002.
2. C Xavier, "World Wide Web design with HTML",Tata Mc-Graw Hill, 2008.

WEB REFERENCES
www.informatics.buzdo.com/p912-internet-principles.htm

COURSE OUTCOMES
On completion of this course students are able to:
- To learn the basics of Internet.
- To provide fundamental knowledge in WWW

PROGRAMMING WITH JAVA

COURSE OBJECTIVES

- To understand the basics of Object Oriented Programming concepts, Character Set, tokens, variables, data types, operators and control structure.
- To understand the fundamental concept of Java like class and object, array, methods, constructors and inheritance.
- To understand the concept of package, Exception Handling and Threading.
- To understand the concepts of Applets and AWT.
- To understand the concepts of JDBC connectivity.

UNIT - I: BASIC CONCEPTS

OOP and Java - Objects and Classes, Encapsulation, Inheritance, Polymorphism, Java Language, The Primaries – Character Set, Tokens, Constants, Variables, Operators and Expressions, Library Methods, Strings, I/O Streams, Formatting the Output values, Control Statements – If, Switch, While, Do-While-for.

UNIT - II: ARRAYS AND OO FEATURES

One, Two dimensional Arrays, Methods – General form, invoking, method overloading, recursion, Classes and objects – General form, creation, constructors, constructor overloading, copy constructor, 'this' keyword, Static members, finalize method, Inner class and anonymous classes, Inheritance – inheriting, abstract classes and final classes, Interfaces – structure, implementation, interface inheritance.

UNIT - III: PACKAGES, EXCEPTION HANDLING AND THREADING

Packages – Package Hierarchy, Import Statement, Hiding the Classes, Access Control Modifiers, Exception Handling – Default Exception – User Defined Exception Handling, Exception and Error Classes, Throw and Throws. Threading – Life Cycle, Creating and Running, Methods in Thread Class, Priority Thread, Synchronization, Dead Lock, Inter Thread Communication.

UNIT - IV: APPLETS AND AWT

Applets – Life Cycle, Applet Class, Syntax of Applet Tag, Methods in Graphics Class, Events, Listeners, Event Handling Methods, Inheritance of Control Classes, Labels, Button Control, Check Box Control, Radio Button, Choice Control, List Control, Scroll Bars, Layouts and Panel, Windows and Frames, Menus and Dialogs, Mouse Events and Listeners, Adapter Class and Inner Class.

UNIT - V: JDBC

JDBC – Establishing Connection, Creating Tables, Enter Data, Table Updating Obtaining Metadata, Using Transactions.

TEXT BOOK

1. Muthu C, "Programming in Java", 2nd Edition, Tata Mcgraw Hill Education Private Limited, 2009.

Unit –I	**:**	**Ch. 1, 2, 3**
Unit - II	**:**	**Ch. 4, 5, 6**
Unit - III	**:**	**Ch. 7, 12, 13**
Unit – IV	**:**	**Ch. 8, 9, 10**
Unit – V	**:**	**Ch. 18**

REFERENCES

1. Herbert Schildt, "The Complete Reference – Java 2", 4th Edition, Tata McGraw Hill, 2001.
2. Balaguruswamy, "Programming with JAVA", 2nd Edition, Tata McGraw Hill, 1999.

WEB REFERENCES

Online Tutorial
1. http://www.tutorialspoint.com/java/
2. http://javabeginnerstutorial.com/core-java/

Online Quiz
1. https://www.tutorialspoint.com/java/java_online_quiz.htm
2. http://withoutbook.com/OnlineTestStart.php?quizId=2

Online Compiler
1. https://www.codechef.com/ide
2. https://www.tutorialspoint.com/compile_java_online.php

COURSE OUTCOMES

- Understand the basics of Object Oriented Programming concepts, Character Set, tokens, variables, data types, operators and control structure.
- Understand the fundamental concept of Java like class and object, array, methods, constructors and inheritance.
- Understand the concept of package, Exception Handling and Threading.
- Understand the concepts of Applets and AWT.
- Understand the concepts of JDBC connectivity.

RELATIONAL DATABASE MANAGEMENT SYSTEM

COURSE OBJECTIVES
- To understand the basic concepts of Database and Data Models.
- To understand the consequences of bad database design and how it can be overcome.
- To learn how to implement the query language in database.
- To know what is the role of PL/SQL in RDBMS.
- To have the basic knowledge on NoSQL.

UNIT – I: BASIC CONCEPTS AND DATA MODELS
Basic Concepts: Data modeling for database - The three level architecture proposal forDBMS – Components of DBMS - Advantage and Disadvantage of a DBMS. Data Models: Data Models Classification - Entity Relationship Model – Relational Data Model – Network Data Model - Hierarchical Model - Comparison.

UNIT – II: RELATIONAL MODEL & RELATIONAL DATABASE DESIGN
Relational Model: Relational Database - Relational Algebra. Relational Database Design - Relational Scheme and Relational Design - Anomalies in Database - Universal Relation - Functional Dependency - Relational Dependency - Relational Database Design.

UNIT – III: SQL
Basic SQL SELECT statements – Table Creation and management – Constraints – Data manipulation and Transaction Control – Additional database Objects - Group functions – Sub Queries and Merge – Views – Formatted readable

UNIT – IV: PL/SQL
Introduction to PL/SQL – PL/SQL Essentials – Understanding PL/SQL Built-in functions – Understanding PL/SQL Control Structures – Implementing SQL Operations in PL/SQL – Understanding subprograms in PL/SQL.

UNIT – V:ALTERNATIVE DBMS
Overview of NoSQL - NoSQL Storage Types – Storage Types –Multi-Storage type database – Comparing the models. Advantages and Drawbacks – Transactional Application – Computational Application – Web-Scale Application.

TEXT BOOK
>   Bipin C Desai, "An Introduction to Database System", Galgotia Publications Pvt Ltd,New Delhi 1999.

Unit – I	:	**Ch.1.1, 1.4 - 1.6, 2.3 - 2.4 & 2.6 - 2.9**
Unit – II	:	**Ch. 4.1 - 4.3, 6.1 – 6.5**

2. Joan Casteel "ORACLE 10g SQL", Gengage Learning, Fifth Edition 2010.

Unit – III	:	**Ch. 2,3,4,5,6,12,13,14**
Unit – IV	:	**Ch. 1,2,3,4,5,8**

3. Gaurav Vaish, "Getting started with NoSQL", Packt Publishing Ltd, 2013.

Unit – V   :   Ch.1, 3, 4

REFERENCES

1. C.J. Date, "Introduction to Database System", Vol 1, Narosa Publishing House, New Delhi.
2. Database Systems, S. K. Singh, Third Edition. 2009.
3. Database Management Systems, Ramakrishnan. Gehrke, International Edition. 2003.
4. RajeshkharSunderraman, "Oracle 8 Programming A Primer, Addition",Wesley Publication, New Delhi, 2000.

WEB REFERENCES

Online Tutorial
1. https://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm
2. http://searchoracle.techtarget.com/tutorial/Learning-Guide-RDBMS-fundamentals

Online Quiz
1. https://www.quia.com/quiz/164512.html
2. https://www.wiziq.com/online-tests/22152-rdbms-concepts

Online Compiler
1. https://www.tutorialspoint.com/execute_sql_online.php
2. https://kripken.github.io/sql.js/GUI/

COURSE OUTCOMES

Upon successful completion of this subject students should be able to:

- To make the student to know about the database schema and learn the basic terminologies used in database
- To enable the student to learn the life cycle and development of database management systems
- To facilitate the student to write SQL queries to manipulate data
- To help the student to learn PL/SQL programming
- To make the student to access database without query languages

OPEN SOURCE TECHNOLOGIES

COURSE OBJECTIVES
- To learn about Perl and Advanced Perl.
- To understand the concept of Apache, MySQL and PHP.

UNIT – I: BASIC PERL
Introduction-Scalar Data- Lists and Arrays-Subroutines-Input and Output- Hashes-Regular Expressions-Control Structures-Perl Modules-File Tests

UNIT – II: ADVANCED PERL
Directory Operations-Strings and Sorting-Smart Matching-Process Management-
Advanced Perl Techniques

UNIT – III: APACHE
Introduction - Apache Explained - Starting, Stopping, and Restarting Apache - Modifying the Default Configuration - Securing Apache - Set User and Group - Consider Allowing Access to Local Documentation - Don't Allow public_html Web sites - Apache control with .htaccess.

UNIT – IV: MYSQL
Introduction to MY SQL - The Show Databases and Table - The USE command - Create Database and Tables - Describe Table - Select, Insert, Update, and Delete statement - Some Administrative detail - Table Joins - Loading and Dumping a Database.

UNIT – V: PHP
Accessing PHP - Creating a Sample Application - Embedding PHP in HTML - Adding Dynamic Content -Accessing Form Variables - Understanding Identifiers - Examining Variable Types - Declaring and Using Constants - Understanding Variable Scope - Using Operators - Understanding Precedence and Associativity - Using Variable Functions - Making Decisions with Conditionals - Repeating Actions Through Iteration. PHP validations -Accessing MySQL Database from the Web with PHP.

TEXT BOOKS
Unit I & II
1. Randal L. Schwartz, Tom Phoenix, brian d foy, **"**Learning Perl, Fifth Edition Making Easy Things Easy and Hard Things Possible", O'Reilly Media, June 2008

Unit III & IV
2. James Lee and Brent Ware, "Open Source Web Development with LAMP using Linux,Apache, MySQL, Perl and PHP", James Lee and Brent Ware, Dorling Kindersley (India), Pvt,Ltd, 2008

Unit V
3. Luke Welling, Laura Thomson "PHP and MySQL Web Development" Pearson Education, Inc.,Fourth Edition, 2008

REFERENCES

1. Steven D. Nowicki, Alec Cove, Heow Eide-goodman ,"Professional PHP", Wrox Press, 2004.
2. Eric Rosebrock, Eric Filson, "Setting up LAMP: Getting Linux, Apache, MySQL, and PHP and working Together", Published by John Wiley and Sons, 2004

WEB REFERENCES

Online Tutorial

http://my.safaribooksonline.com/book/databases/mysql/020177061x

Online Quiz

http://www.w3schools.com/html/html_quiz.asp
http://www.realinformation.net/Apache_Server_Popquiz.htm
http://www.withoutbook.com/OnlineTestStart.php?quizId=31
http://www.myphpquiz.com/

COURSE OUTCOMES

On successful completion of the course students will be able to:

- Understand the features of PHP
- Develop the different applications using PHP
- Demonstrate the applications using PHP with Mysql
- Understand the concepts of Perl
- Develop the applications using Perl

PROGRAMMING WITH JAVA

1. Class and Objects
2. String and String Buffer Class
3. Inheritance and Interface
4. Packages
5. Exception Handling
6. Threads
7. Applet
8. Shapes
9. AWT
10. JDBC

RELATIONAL DATABASE MANAGEMENT SYSTEM

SQL

1. Data Definition Language (Create, Alter, Drop, Rename)
2. Data Manipulation Language (Insert, Update, Delete)
3. Transactional Control Language (Commit, SavePoint, RollBack)
4. Queries using Aggregate Functions (Count, Sum, Avg, Max and Min)

PL/SQL

5. Blocks
6. Exception Handling
7. Functions
8. Procedures
9. Cursors
10. Triggers

OPEN SOURCE TECHNOLOGIES

1. Variables, Constants and Operators
2. Conditional statements
3. Control Structures
4. Functions
5. Cookies and Session
6. Predefined Variables
7. MySQL functions
8. E-Mail Function
9. File Operations and File Uploading
10. Database Application with MYSQL

[SEMESTERII: CORE ELECTIVE]   **[Hrs: 3/Credits: 3]**

A. OPERATION RESEARCH

COURSE OBJECTIVES

UNIT– I:
Linear Programming Models : Mathematical Formulation –Graphical Solution of linear Programming models – Simplex Method -Artificial Variable Techniques .

UNIT - II:
Transportation and Assignment Models : - Methods for finding initial Basic feasible solution – Optimum solution-degeneracy- Hungarian Algorithm-Variants of the Assignment Problem.

UNIT- III:
Integer Programming Models: Formulation- Gomory's IPPMethod –Gomory's mixed integer method.

UNIT - IV:
Scheduling by PERT and CPM : Network Construction-Critical Path Method – Project Evaluation and Review Technique.

UNIT- V:
Queuing Models : Characteristics of Queuing Models – Poisson Queues - (M/M/1) : (FIFO/ ∞ / ∞), (M/M/1) : (FIFO /N/ ∞) models.

TEXT BOOK

1. Ataha H.A, "Operation Research: An Introduction", Pearson Education, 8/E**,** 2006.

REFERENCES

1. S.P. Gupta, " An Introduction to Operation Research", Pearson Education, 8/E, 2006
2. R. Sivarethinamohan, " An Introduction to Operation Research", TMG, 1/E, 2006
3. P.K. Gupta, Gandhi Swaroop, Manmohan, "Problem in Operation Research", Sultan and Chands, 4/E, 2004
4. P.R.Vittal and Malini , "An Introduction to Operation Research", Pearson Education, 8/E, 2006

WEB REFERENCES

http:// https://www.tutorialspoint.com/operationresearch/>
<http://www.indiabix.com/online-test/operationresearch.test/>

COURSE OUTCOMES

Upon completion of the course, the students will be able to:

- Basic knowledge of matrix, set theory, functions and relations concepts needed for designing and solving problems. Logical operations and predicate calculus needed for computing skill.

- Design and solve Boolean functions for defined problems.

B. GRAPH THEORY

COURSE OBJECTIVES

Unit – I:

Fundamental concepts 32 32 Basic definitions, operations, properties, proof styles; Trees (properties, distances and centroids, spanning trees, enumeration),Graphs and digraphs, complement, isomorphism, connectedness and reachability, adjacency matrix, Eulerian paths and circuits in graphs and digraphs, Hamiltonian paths and circuits in graphs and tournaments,

Unit – II:

Matchings Bipartite graphs, general graphs, weighted matching; Connectivity (vertex and edge connectivity, cuts, blocks, k-connected graphs, network flows). trees; Minimum spanning tree, rooted trees and binary trees, planar graphs, Euler's formula, statement of Kuratowskey's theorem, dual of a planer graph, independence number and clique number, chromatic number, statement of Four-color theorem, dominating sets and covering sets.

Unit – III:

Traversibility Eulerian tours, Hamiltonian cycles; Coloring (vertex and edge coloring, chromatic number, chordal graphs).

Unit – IV:

Planarity Duality, Euler's formula, characterization, 4-color theorem; Advanced topics (perfect graphs, matroids, Ramsay theory, extremal graphs, random graphs); Applications

Unit – V:

Graph problems Graph searching – BFS, DFS, shortest first search, topological sort; connected and biconnected components; Minimum spanning trees – Kruskal's and Prim's algorithms – Johnson's implementation of Prim's algorithm using priority queue data structures. Algebraic problems: Evaluation of polynomials with or without preprocessing. Winograd's and Strassen's matrix multiplication algorithms and applications to related problems, FFT, simple lower bound results.

TEXT BOOK
1. Douglas B. West, Introduction to Graph Theory, Prentice Hall of India, 1996

REFERENCES
1. A. Gibbons, Algorithmic Graph Theory, Cambridge University Press, 1985.

2. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science. Prentice-Hall, 2004
3. Frank Harary, Graph Theory, Narosa, 1994.
4. R. Ahuja, T. Magnanti, and J. Orlin, Network Flows: Theory, Algorithms, and Applications, Prentice-Hall, 1988.

WEB REFERENCES
http:// https://www.tutorialspoint.com/graphtheory/>
http://www.indiabix.com/online-test/graphtheory.test

COURSE OUTCOMES
Upon completion of the course, the students will be able to:

- Understand Graph theory principles and its applications.
- Study of different Graph theory algorithms.
- Gain to deploy Graph theory applications using a software development environment.

C. DISCRETE MATHEMATICS

COURSE OBJECTIVES

UNIT -I:
Introduction – Matrix Operators – Inverse of a square Matrix Elementary Operations and Rank of a Matrix – Simultaneous Equations Inverse by Partitioning - Eigen Values and Eigen Vectors.

UNIT –II:
Set Theory: Introduction – Sets – Notions and Description of Sets – Subsets –Venn – Diagram –Operations on Sets – Properties of Set Operations –Verification of the Basic Laws of Algebra by Venn Diagrams –The principles of Duality –Relations: Cartesian Product of Two Sets –Relations –Representation of a Relation –Operations –on Relation –Equivalence Relations – Equivalence Relation – Closure and Wars hall's algorithm – One-to-one, Onto Functions – Special Types of functions –Invertible Functions –Composition of Functions

UNIT –III:
Logic: Introduction – TF Statement – Connectives – Atomic and Compound statements – Well Formed Formulae – Truth Table of a Formula –Tautology –Tautology Implications and Equivalence of Formulae –Replacement Process –Functionally Complete Sets of Connectives and Duality Law – Normal Forms – Principles of Normal Forms –Theory of Inference –Open Statement –Quantifiers – Valid Formulae and Equivalence –Theory of Inference for Predicate Calculus –Statements involving more than one Quantifier.

UNIT –IV:
Finite Automata – Definition of Finite Automation – Representation of finite Automaton – Acceptability of a String by Non-Deterministic Finite Automata –Equivalence of FA and NFA – Procedure for finding an FA equivalent to a given NFA –Properties of Regular Sets – Finite State Machines – The monoid of a Finite NFA –Properties of Regular Sets – Finite State Machines –The monoid of a Finite State Machine –Machine of a monoid –phrase Structured Grammars.

UNIT –V:
Chomsky Hierarchy of Languages – Finite Automata and Regular Languages – Derivation Trees; For Context-free Grammars –Normal Forms for Context-free grammars- Acceptance, Polish Notation –Simple Precedence Grammar - Pushdown Automation – Instantaneous Description of a PDA- Important Properties of Move Relation- Acceptance by PDA – Equivalence of two types of Acceptance by PDA- Context-free Languages and PDAs-

Turing Machines- The language accepted by a TM- Turing Machine as a Computer integer- Functions - Techniques for Turing Machine Construction

TEXT BOOK

1. M.K. Venkatraman, Sridharan, N. Chandrasekaran – "Discrete Mathematics", National Publishing Company, 1/E, 2000.
2. R.M. Somasundaram, "Discrete Mathematical Structures", PHI, 1/E, 2003.

REFERENCES

1. Hopcraft and Ullman, "Introduction to Automata Theory, Languages & Computation", Pearson Education, 2/E, 2006.
2. Tremblay and Manohar, "Discrete Mathematical structures with applications to computer science", Tata McGraw-Hill, 1/E, 2007.

WEB REFERENCES

http:// https://www.tutorialspoint.com/discretemathematics/>
<http://www.indiabix.com/online-test/discretemathematetics>

COURSE OUTCOMES

Upon completion of the course, the students will be able to:

- Analyze different techniques of sentential calculus, and write down truth tables.
- Represent relations in various ways. Show whether a relation is of equivalence, of partial order or neither.

A. PROBLEM SOLVING TECHNIQUES

COURSE OBJECTIVES
- To develop problem solving skills with top down design principles.
- To become competent in algorithm design and program implementation.
- To develop skills to apply appropriate standard methods in problem solving

UNIT - I: PROGRAMMING TECHNIQUES
Steps Involved in Computer Programming – Problem Definition – Outlining The Solution – Flow Chart – Developing Algorithms – Efficiency of Algorithms - Analysis of Algorithms.

UNIT – II: FUNDAMENTAL ALGORITHMS
Exchanging the Values – Counting – Summation of Set of Number – Factorial Computation – Sine Computation – Fibonacci Sequence – Reversing the Digits of an Integer – Base Conversion – Character to Number Conversion.

UNIT – III: FACTORING METHODS
Finding the Square Root of a Number – Smallest Divisor of an Integer – GCD of Two Integers – Generating Prime Numbers – Computing the Prime Factors of an Integer – Generation of Pseudo-Random Numbers – Raising a Number to a Large Power – Computing the Nth Fibonacci Number.

UNIT – IV: ARRAY TECHNIQUES
Array Order Reversal – Array Counting Or Histogramming – Finding the Maximum Number in a Set – Removal of Duplicates from an Ordered Array – Partitioning an Array – Finding The kth Smallest Element – Longest Monotone Subsequence.

UNIT – V: MERGING, SORTING AND SEARCHING
Two Way Merge - Sorting by Selection, Exchange, Insertion, Partitioning - Binary Search – Hash Searching.

TEXT BOOK
Dromey R G, "How to Solve it by Computer", Prentice Hall of India, 1997

REFERENCES
1. Michael Schneider, Steven W. Weingart, David M. Perlman, "An Introduction to Programming and Problem Solving with Pascal", Wiley Eastern Limited, New Delhi, 1982.
2. Harold Abelson and Gerald Sussman with Julie Sussman, " Structure and Interpretation of Computer Programs", MIT Press, 1985.

WEB REFERENCES

http://nptel.ac.in/courses/106104074/

http://javahungry.blogspot.com/2014/06/algorithm-problem-solving-techniques-or-approaches-for-software-programmer.html

COURSE OUTCOMES

Upon Completing the Course, Students will be able to:

- Develop programming techniques required to solve a given problem.
- Develop problem solving skill using top – down design principles.
- Design an algorithm for a problem.
- Develop techniques to handle array structure
- Develop techniques such as searching and sorting

B. OPEN SOURCE SOFTWARE

COURSE OBJECTIVES
- To understand the features of PHP
- To develop the different applications using PHP
- To demonstrate the applications using PHP with Mysql
- To understand the concepts of Perl
- To develop the applications using Perl

Unit- I: BASIC PHP
Web Server-Apache-PHP-Data Types-User defined Variables-Constants-Operators-Control Structures-User defined Functions-Directory Functions-File system Functions-Arrays-String Functions-Date and Time Functions-Mathematical Functions-Miscellaneous Functions

UNIT - II: ADVANCED PHP WITH MYSQL
Exceptions handling-Error Handling Functions-Predefined Variables-Cookies-Sessions-COM-DOM- CURL-SOAP-Classes and Objects-Mail Function-URL Functions. PHP with MySQL: PHP MySQL Functions-Database driven application.

UNIT - III: ADVANCED PHP WITH AJAX, SEO AND CMS PHP WITH AJAX
Introducing Ajax-Ajax Basics-PHP and Ajax-Database Driven Ajax. PHP with SEO: Basic SEO-Provocative SE Friendly URLs-Duplicate Content- CMS: Wordpress Creating an SE-Friendly Blog.

Unit - IV: BASIC PERL
Introduction-Scalar Data- Lists and Arrays-Subroutines-Input and Output- Hashes-Regular Expressions-Control Structures-Perl Modules-File Tests

Unit 5: ADVANCED PERL
Directory Operations-Strings and Sorting-Smart Matching-Process Management- Advanced Perl Techniques

TEXT BOOKS
Unit 1 & 2 :
Mehdi Achour, Friedhelm, Betz Antony Dovgal, Nuno Lopes, Hannes Magnusson, Georg Richter, Damien Seguy, Jakub Vrana And several others, "PHP Manual (Download the manual from PHP official website www.php.net)", 1997-2011 the PHP Documentation Group.
Unit 3 :
Lee Babin, "Beginning Ajax with PHP From Novice to Professional", Apress, 2007 (Chapters 1, 2, 3 and 4)   Jaimie Sirovich and Cristian Darie, "Professional Search Engine

Optimization with PHP   A Developer's Guide to SEO", Wiley Publishing, Inc., Indianapolis, Indiana ,2007   (Chapters 2, 3, 5 and16)

Unit 4 & 5:

Randal L. Schwartz, Tom Phoenix, brian d foy, "Learning Perl, Fifth Edition Making Easy Things Easy and Hard Things Possible", O'Reilly Media, June 2008

REFERENCES

Steven D. Nowicki, Alec Cove, Heow Eide-goodman ,"Professional PHP", Wrox Press, 2004.

WEB REFERENCES

www.php.net
www.phpclasses.org

COURSE OUTCOMES

On successful completion of the course students will be able to:

- Understand the features of PHP
- Develop the different applications using PHP
- Demonstrate the applications using PHP with Mysql
- Understand the concepts of Perl
- Develop the applications using Perl

C. PRINCIPLES OF WEB DESIGN

COURSE OBJECTIVES

- To provide a comprehensive overview of the largest Web Technologies, Hyper Text Markup Languages (HTML) and Cascading Style Sheet (CSS).
- To learn through hands-on, practical instruction that will assist the students to tackle the real-world problems they face in building websites today—with a specific focus on HTML5 and CSS3.

UNIT - I : HTML INTRODUCTION

Web page: Static & Dynamic Page - Web Browsers - HTML Editors - Tags – Elements – Attributes - HTML Page Structure - HTML Basic tags: Head – Title – Body. Basic text formatting: Heading tags – Paragraph tag – hr tag - Line break – Pre formatted. Presentational Element - Phrase Elements. List Tags: Ordered List – Unordered List – Definition List.

UNIT – II: LINKS, IMAGES AND TABLES

Link: Basic link – Directories and directory structure – creating links. Image and Object: Adding image to your site – Adding other objects – Using image as links.
Tables: Basic table elements and attributes – Advanced table – Accessibility issues with tables.

UNIT – III: FRAMES AND FORMS

Frames: The Frameset, No Frame Element - Creating Link between Frames - Nested Frameset. Form: Text Fields - Password Field - Radio Button – Checkbox - Submit Button – Reset Button – Button – Select – option – text area.

UNIT – IV: CASCADING STYLE SHEET-I

Introduction – syntax – ID selector - Class selector – External CSS – Internal CSS – Inline CSS – Font property: Font family - font size – font weight - font style - font variant - font stretch - font size adjust. Text Formatting: Color, text-align, vertical-align, decoration – indent- shadow –transform- letter spacing –word pacing- white space - direction. Text Pseudo Classes: First-letter pseudo class - First line pseudo class.

UNIT - V: CASCADING STYLE SHEET-II

Background: color – image – repeat – position – attachment. List: style type – style position – style image – marker offset. Table: table specific – border collapse – border spacing – caption side – empty cell – table layout. Outlines: outline width – outline style – outline color. The: focus and: active pseudo classes.

TEXT BOOK

1. Jon Ducktt. "Web Programming with HTML, CSS and JAVA SCRIPT", Wiley Publishing, 2005. Unit – I: Ch.1   Unit – II: Ch. 2, 3 & 4 Unit - III: Ch.5, 6 Unit – IV: Ch.7 Unit - V: Ch.8

REFERENCES

1. Joel Skylar. "Principles of Web Design". Singapore: Thomson Asia Pvt. Ltd 2000
2. Powell, Thomas A. "Web Design – The Complete Reference", Tata McGraw Hill Edition 2000
3. Alexis Goldstein, Louis Lazaris, Estelle Weyl. "HTML5 & CSS3 for the Real World".

WEB REFERENCES

http://www.w3schools.com/css
http://www.tutorialspoint.com/c**ss**

COURSE OUTCOMES

After the completion of the course the students will be able:

- Able to learn how to combine basic HTML elements to create Web pages.
- Understand the use of HTML tags and tag attributes to control a Web page's appearance.
- Capable to learn how to add absolute URLs, relative URLs, and named anchors to Web pages.
- Gain a good understanding of using tables and frames as navigational aids on a Web site.
- Able to control appearance webpages by applying style sheet.

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