ANNAMALAI UNIVERSITY
MASTER OF COMPUTER APPLICATION
CBCS PATTERN
(With effect from 2021 - 2022)

The course of Study and scheme of Examination

S.No	Study Components Course Title		Ins. Hrs./ Week	Credit	Title of the Paper	Maximum Marks		
						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								
7.	Core Elective	Paper -1	3	3	**(to choose one out of 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	**(to choose one out of 3)** A. E-Commerce B. Introduction to Computer Application C. Principles of Internet	25	75	100
			30	**21**		**200**	**600**	**800**
SEMESTER II						**CIA**	**Uni. Exam**	**Total**
9.	Core	Paper-4	5	3	Programming with Java	25	75	100
10.	Core	Paper-5	4	3	Relational Database Management System	25	75	100
11.	Core	Paper-6	4	3	Open Source Technologies	25	75	100
12.	Practical	Paper-4	3	2	Practical 4: Programming with Java	25	75	100
13.	Practical	Paper-5	3	2	Practical 5: Relational Database Management System	25	75	100
14.	Practical	Paper-6	3	2	Practical 6: Open Source Technologies	25	75	100
Internal Elective for same major students								
15.	Core Elective	Paper-2	3	3	**(to choose one out of 3)** A. Operation Research B. Graph Theory C. Discrete Mathematics	25	75	100
External Major for other major Students (Inter/multi-disciplinary papers)								

16.	Open Elective	Paper-2	3	3	**(to choose one out of 3)** A. Problem Solving Techniques B. Open Source Software C. Principal of Web Design	25	75	100
17.	*Field Study		-	2		100	-	100
18.	Compulsory Paper		2	2	Human Rights	25	75	100
			30	**25**		**325**	**675**	**1000**
			120	**90**				
SEMESTER III						**CIA**	**Uni. Exam**	**Total**
19.	Core	Paper-7	5	3	Advance Java Programming	25	75	100
20.	Core	Paper-8	5	3	Unix and Shell Programming	25	75	100
21.	Core	Paper-9	5	3	Desktop Applications using C#	25	75	100
22.	Practical	Paper-7	3	2	Practical 7: Advance Java Programming	25	75	100
23.	Practical	Paper-8	3	2	Practical 8: Unix and Shell Programming	25	75	100
24.	Practical	Paper-9	3	2	Practical 9: Desktop Applications using C#	25	75	100
Internal Elective for same major students								
25.	Core Elective	Paper -3	3	3	**(to choose one out of 3)** A. Software Testing B. Software Project Management C. Object Oriented Software	25	75	100
External Major for other major Students (Inter/multi-disciplinary papers)								
26.	Open Elective	Paper -3	3	3	**(to choose one out of 3)** A. Introduction to C B. Introduction to C# C. Introduction to Python	25	75	100
27.	**MOOC Courses		-	-		-	-	100
			30	**22**		**200**	**600**	**900**
SEMESTER 1V						**CIA**	**Uni. Exam**	**Total**
28.	Core	Paper-10	4	3	Enterprise Java Programming	25	75	100
29.	Core	Paper-11	4	3	Python Programming	25	75	100
30.	Core	Paper-12	4	3	Web Applications using C#	25	75	100
31.	Core	Project	3	3	Project Work (Compulsory)	100 (75 Project + 25 viva)		100
32.	Practical	Paper-10	3	2	Practical 10: Enterprise Java Programming	25	75	100
33.	Practical	Paper-11	3	2	Practical 11: Python Programming	25	75	100
34.	Practical	Paper-12	3	2	Practical 12:Web Applications using C#	25	75	100
Internal Elective for same major students								
35.	Core Elective	Paper -4	3	3	**(to choose one out of 3)** A. Internet of Things	25	75	100

					B. Cloud Computing C. Big Data Analysis			
External Major for other major Students (Inter/multi-disciplinary papers)								
36.	Open Elective	Paper-4	3	3	**(to choose one out of 3)** A. Introduction to Database System B. Introduction to IoT C. Introduction to Mobile Application	25	75	100
			30	**24**		**200**	**600**	**900**
			120	**90**				**3600**

*** Field Study**

There will be field study which is compulsory in the first semester of all PG courses with 2 credits. This field study should be related to the subject concerned with social impact. Field and Topic should be registred 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

****Mooc Courses**

Inclusion of the Massive Open Online Courses (MOOCs) with zero credits available on SWAYAM, NPTEL and other such portals approved by the University Authorities.

ANNAMALAI UNIVERSITY

MASTER OF COMPUTER APPLICATION

SYLLABUS

UNDER CBCS

(With effect from 2021-2022)

[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.

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

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.

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

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.

[SEMESTERI: PRACTICAL] **[Hrs: 3/Credits: 2]**

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

[SEMESTERI: PRACTICAL] **[Hrs: 3/Credits: 2]**

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.

[SEMESTERI: PRACTICAL] **[Hrs: 3/Credits: 2]**

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

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

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

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

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.

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

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

[SEMESTERI: OPEN ELECTIVE] **[Hrs: 3/Credits: 3]**

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.

[SEMESTERI: OPEN ELECTIVE] **[Hrs: 3/Credits: 3]**

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

[SEMESTERI: OPEN ELECTIVE] **[Hrs: 3/Credits: 3]**

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

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

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.

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

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

[SEMESTERII: CORE]

[Hrs: 5/Credits: 3]

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

[SEMESTERII: PRACTICAL] **[Hrs: 3/Credits: 2]**

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

[SEMESTERII: PRACTICAL] **[Hrs: 3/Credits: 2]**

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

[SEMESTERII: PRACTICAL] **[Hrs: 3/Credits: 2]**

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.

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

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.

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

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.

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

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

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

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

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

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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SEMESTER III

PAPER - 7

ADVANCED JAVA PROGRAMMING

COURSE OBJECTIVES

- To introduce programming with Applet and AWT.
- An overview of database access and details for managing information using the JDBC API.
- Examine the use of networking and collections.
- Learn how to program Servlet and JSP.
- To understand the web programming concepts in the perspective of Client and Server.

UNIT -I: APPLETS AND GUI

Applet Fundamentals- Applet Class - Applet lifecycle- Steps for Developing Applet Programs- Passing Values through Parameters- Graphics in Applets; GUI Application - Dialog Boxes - Creating Windows - Layout Managers – AWT Component classes – Swing component classes- Borders – Event handling with AWT components - AWT Graphics classes - File Choosers - Color Choosers – Tree – Table –Tabbed panels–Progressive bar - Sliders.

UNIT- II: JDBC AND JAVA NETWORKING

JDBC -Introduction - JDBC Architecture - JDBC Classes and Interfaces – Database Access with MySQL -Steps in Developing JDBC application - Creating a New Database and Table with JDBC - Working with Database Metadata; Java NetworkingBasics of Networking - Networking in Java- Socket Program using TCP/IP - Socket Program using UDP- URL and Inetaddressclasses.

UNIT- III: COLLECTIONS AND DESIGN PATTERNS

Collection Framework - ArrayList class - LinkedList class - ArrayListvs Linked List - ListIterator interface - HashSet class, LinkedHashSet class, TreeSet class PriorityQueue class - Map interface, HashMap class, LinkedHashMapclass ,TreeMap class - Comparable interface , Comparator interface, Comparable vs Comparator; Design Patterns: Introduction to Design patterns - Catalogue for Design Pattern - Factory Method Pattern, Prototype Pattern, Singleton Pattern, Adapter Pattern, Proxy Pattern, Decorator Pattern, Command Pattern, Template Pattern, Mediator Pattern;

UNIT -IV: SERVLET AND JSP

Servlet: Advantages over Applets - Servlet Alternatives - Servlet Strengths - Servlet Architecture - Servlet Life Cycle – GenericServlet, HttpServlet - First Servlet - Invoking Servlet - Passing Parameters to Servlets - Retrieving Parameters - Server-Side Include – Cookies; JSP : JSP Engines Working with JSP - JSP and Servlet - Anatomy of a JSP Page.

UNIT -V: WEB PROGRAMMING

Client-Side Programming: Client-side programming technologies - Form design using HTML, XHTML and DHTML and CSS - Client side validation Using JavaScript - Content Structuring using XML - Adding Interactivity with AJAX -JQuery Framework;

Server-side Programming: Web Servers - Handling request and response - Handling Form data - Session management - Database Access.

TEXT BOOK

2. S. Sagayaraj, R. Denis, P.Karthik& D. Gajalakshmi "Java Programming", Universities Press, 2018.

REFERENCES

1. Patrick Naughton& Herbert Schildt, "The Complete Reference: Java 2", Tata McGraw Hill, 1999.
2. Deitel&Deitel, "Java How to Program", Prentice Hall, 5th Edition, 2002
3. Peter Haggar, "Practical Java: Programming Language Guide", Addison-Wesley Pub Co, 1st Edition, 2000.
4. C.Muthu, "Programming with Java", McGraw Hill, Second Edition, 2008

WEB REFERENCES

http://math.hws.edu/javanotes/c6/index.html
http://www.tutorialspoint.com/awt/
www.studytonight.com
www.javatpoint.com
www.learnjavaonline.org
www.codingbat.com

COURSE OUTCOMES

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

- Develop Applet Programming using various techniques
- Develop applications using Abstract Window Toolkit and Events
- Update and retrieve the data from the databases using JDBC-ODBC
- Develop server side programs in the form of Servlets
- Build up Java Applications using collections and JSP Tags.

PAPER - 8

UNIX AND SHELL PROGRAMMING

COURSE OBJECTIVES

- To learn to add and remove users.
- To understand basic UNIX commands.
- To use controls structures.
- To understand loop structures.
- To understand System calls.

UNIT – I : FILE ORGANIZATION

Salient Features of Unix – Unix System Organization – Types of Shells – Unix Commands – The Unix File System – Creating Files – Listing Files and Directories. - The Boot Block – The Super Block – The Inode Table – Data Blocks – How Does Unix Access Files – Storage of Files – Disk Related Commands. System Administration: Adding and Removing Users – Daily Administration – Disk Management – Using a Raw Disk – Monitoring System Usage – Ensuring System Security – Providing Assistance to Users.

UNIT - II: UNIX COMMANDS

Password – Commands: cal, banner, touch – File Related Commands – Viewing Files – Taking Printouts – File Compression – I/O Redirection and Piping. vi Editor – Modes of operation – The First Editing Session. Processes in Unix: What's Running Right Now – Still More Processes – Background Processes – The nohup command – Killing a process – Changing Process Priorities – Scheduling of Processes, Communication – Unix write and wall command - Basis of Unix Communication.

UNIT - III: SHELL PROGRAMMING - I

Interactive Shell Scripts – Shell Variables – Shell Keywords –Assigning Values to Variables – Positional Parameters – Passing Command Line Arguments – Setting Values of Positional Parameters – Displaying Date in Desired Format – Using Shift on Positional Parameters – Arithmetic in Shell Script- Taking Decisions.

UNIT - IV SHELL PROGRAMMING - II

Loop Control Structure: Loops – The While Loop – Reading from a file – The Until and for Loop – Creating Nested Directories – Generating Values for a for Loop – The Break and Continue Statement- Shell script using Command Line Arguments

UNIT - V: SYSTEM CALLS

System calls: File Structure related calls - create(), open(), close(), read(), write(), lseek(), process related calls- exec(), fork(), wait(), exit(), getpid(), getppid(), signal(), kill(), alarm() – Inter process communication calls– pipe().

TEXT BOOK

Text

1.Yashavant Kanetkar, "Unix Shell Programming", BPB Publishers, New Delhi, 1996.

Unit – I	**:**	**Ch. 1, 2, 3, 15**
Unit – II	**:**	**Ch. 4, 5, 6, 7, 8**
Unit – III	**:**	**Ch. 9 - 10**
Unit – IV	**:**	**Ch. 11**
Unit-V	**:**	**http://www.cs.utk.edu/~huangj/cs360/360/notes/Syscall Intro/lecture.html**

REFERENCES

1. Kernighan. et al. "The UNIX Programming Environment", Second Edition, New Delhi: Prentice Hall of the India, 1988.
2. Stephen G. Kochan, Patrick Wood, "Unix Shell Programming", Third Edition, Dorling Kindersley Pvt Ltd, Delhi, 2008.

WEB REFERENCES

Online Tutorial

1. http://www.cgl.ucsf.edu/Outreach/bmi219/slides/shell.html
2. http://www.cs.utk.edu/~huangj/cs360/360/notes/Syscall-Intro/lecture.html

Online Quiz

1. www.tcyonline.com/tests/unix-and-shell-scripts

Online Compiler

1. *www.compileonline.com/execute_bash_online.php*

COURSE OUTCOMES

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

- Learn to add and remove users.
- Understand basic UNIX commands.
- Use controls structures.
- Understand loop structures.
- Get familiarize with System calls concepts.

PAPER - 9

DESKTOP APPLICATION USING C#

COURSE OBJECTIVES

- To know the differences between desktop and web application.
- To construct classes, methods, and accessor and instantiate objects.
- To create and manipulate GUI components in C#.
- To code solutions and compile C# projects within the .NET framework.
- To build own desktop application with Database

UNIT - I: INTRODUCTION TO C#

Introduction to .NET – Features of C# - Data Types – Value Types – Reference Types - Variables and Constants – Declaring – Assigning values – variables of nullable types – Operators – Type Conversions – Implicit and Explicit Type Conversions – Arrays – Single Dimensional and Multidimensional – Control Flow Statements – Selection – Iteration and Jump – Classes and Objects – Access Modifiers – Defining a Class – Variables – Properties and Methods – Creating Objects – Inheritance – Polymorphism- Constructor and Destructors.

UNIT - II: WINDOWS FORMS

Windows Forms – Form Class – Common Operations on Forms – Creating a Message Box – Handling Events – Mouse Events – Keyboard Events – Common Controls in Windows Forms – Label – TextBox – Button – Combo Box – List Box – Check Box – Radio Button – Group Box – Picture Box – Timer – Open File Dialog – Save File Dialog – Font Dialog – Color Dialog – Print Dialog – Tree View – Menu.

UNIT - III: DELEGATES AND EVENTS

Delegates – Declaring a Delegate – Defining Delegate Methods – Creating and Invoking Delegate Objects – Multicasting with Delegates – Events – Event Sources – Event Handlers – Events and Delegates.

UNIT - IV: REFLECTION AND REMOTING

Life Cycle of threads-Using Reflection – Reflecting the Members of a Class - Dynamic Loading and Reflection - .NET Remoting – Architecture – Hosting of Objects – Single Ton and Single Call – Remoting Server – Remoting Client.

UNIT - V: DATABASE

Creating Connection String – Creating a Connection to a Database – Creating a Command Object – Working with Data Adapters – Using Data Reader to work with Databases – Using Dataset.

TEXT BOOKS

1. Vikas Gupta , “Comdex .NET Programming “ , Dream Tech Press, New Delhi, 2011
2. Kogent Solutions, “ C# 2008 Programming Black Book”, Dream Tech Press, New Delhi, Platinum Edition, 2009

REFERENCES

1. Rebecca M.Riordon, “Microsoft ADO .Net 2.0 Step by Step”, Prentice Hall of India Private Limited, New Delhi, 2007
2. David S.Platt , “Introducing Microsoft .Net”, Prentice Hall of India(Private) Limited, Third Edition, New Delhi, 2006

WEB REFERENCES

http://csharp.net-tutorials.com/index.php
http://csharp.net-tutorials.com/classes/introduction/
http://www.homeandlearn.co.uk/csharp/csharp.html
http://www.indiabix.com/c-sharp-programming/questions-and-answers/
https://www.wiziq.com/online-tests/43860-c-basic-quiz
http://www.withoutbook.com/OnlineTestStart.php?quizId=71
http://www.compileonline.com/compile_csharp_online.php
http://www.ideone.com

COURSE OUTCOMES

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

- To know the differences between desktop application and web application.
- To construct classes, methods, and access modifier and instantiate objects.
- To create and manipulate GUI components in C# for windows application.
- To code solutions and compile C# projects within the .NET framework.
- To build the desktop application with Database.

PRACTICAL-7

ADVANCED JAVA PROGRAMMING

1. Develop Applet Programming with various techniques.
2. Develop applications using AWT.
3. Working with Graphics ,Color and Font
4. Working with JDBC Classes(Database Operations- Create, Insert, Delete, Update, Select)
5. Handling ResultSet and Statements.
6. Jasper Report Generation
7. Working with Servlet and JDBC
8. Handling Client/Server Networking
9. Develop Java Server Pages applications using JSP Tags.
10. Working with Java Collections.

PRACTICAL - 8

UNIX AND SHELL PROGRAMMING

Programming with Shell Script

1. Shell Script – sequential structure
2. Shell Script – Iterative control structure
3. Shell Script – Strings
4. Shell Script – Files
5. Shell Script – Command Line Arguments

System Calls

6. Printing the command line arguments
7. Read(), write(), open(), creat()
8. Execlp(), execvp(), perror(),
9. Use of fork(), wait() & exit()
10. Child process, generated interrupt &lseek()

PRACTICAL - 9

DESKTOP APPLICATIONS USING C#

1. Variables, Constants and Arrays
2. Classes and Objects
3. Inheritance
4. Polymorphism
5. Windows Form Controls (Label, Text, Button, Check Box, Radio)
6. Windows Form Controls (List, Combo, Timer, Group Box, Picture Box)
7. Menu Handling
8. Reflection
9. ADO.NET Connection
10. Data Command

CORE ELECTIVE

PAPER – 3

(to choose one out of 3)

A. SOFTWARE TESTING

COURSE OBJECTIVES

- To know the basic structure for testing teams.
- To expose the concept of test automation and test metrics.
- To know the different types of testing.

UNIT – I: STRUCTURE FOR TESTING TEAMS AND TEST MANAGEMENT

Dimensions of Organization Structures: Structures in Single-Product Companies-Structures for Multi-Product Companies- Effects of Globalization and Geographically Distributed Teams on Product Testing-Testing Services Organizations-Test Management: Test Planning-Test Process-Test Reporting.

UNIT - II: SOFTWARE TEST AUTOMATION AND TEST METRICS

Test Automation-Scope of Automation-Design and Architecture of Automation-Process Model for Automation-Selecting a Test Tool -Challenges in Automation-Test Metrics: Types of Metrics-Project Metrics-Progress Metrics-Productivity Metrics.

UNIT – III: WHITE BOX, BLACK BOX AND INTEGRATION TESTING

White Box Testing: Static Testing Structural Testing-Challenges in White Box Testing-Black Box Testing-Integration Testing: Types of Testing-Scenario Testing-Defect Bash.

UNIT – IV: SYSTEM, PERFORMANCE AND REGRESSION TESTING

System Testing: Functional System Testing-Non-Functional Testing-Acceptance Testing-Methodologies for Performance Testing –Tools for Performance Testing -Process for Performance Testing –Regression testing.

UNIT – V: INTERNATIONALIZATION AND AD HOC TESTING

Introduction-Primer on Internationalization-Enabling Testing-Local Testing-Language Testing-Localization Testing-Tools used for Internationalization-Ad hoc Testing: Pair Testing-Exploratory Testing-Iterative Testing-Agile and Extreme Testing. Software Testing Tools: WinRunner – Silk Test

TEXT BOOK

1. SrinivasanDesikan and Gopalaswamy Ramesh, “Software Testing – Principles and Practices”, Pearson education, 2006. (latest edition)

REFERENCES

1. Boris Beizer, ”Software Testing Techniques” Second Edition, Dreamtech Press, New Delhi,2013.
2. K.V.KK. Prasad , Software Testing Tools, Dreamtech Press, New Delhi, 2005.
3. K.Mustafa and R.A.Khan, “Software Testing-Concepts and Practices”,Narosa Publishing House,New Delhi,2012.

4. William Perry, "Effective Methods for Software Testing", Wiley, New Delhi, 2009.
5. Mark C Paulk, Charles V Weber and Mary B Chrissis, "The Capability Maturity Model", Carnegie Mellon University, Pennsylvania, 2004.
6. John Watkins, “Agile Testing : How to succeed in an extreme Testing environment”, Cambridge Press, Cambridge, 2009

WEB REFERENCES

Online Tutorial

http://www.testingexcellence.com/istqb-quiz/
http://withoutbook.com/OnlineTestStart.php?quizId=53
http://www.careerride.com/software-testing-quiz.aspx
http://en.wikipedia.org/wiki/HP_WinRunner

CORE ELECTIVE

PAPER – 3

B. SOFTWARE PROJECT MANAGEMENT

COURSE OBJECTIVES

- To provide sound knowledge in Project Management.
- To understand the importance of requirement gathering
- To explore different models in Software Development
- To know the workflow of a Project
- To identify various actors in the activity

UNIT I: INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT

Introduction:Project – Software Projects vs other types of Project – Activities Covered by SPM – Some Ways of Categorizing Software Projects – Stakeholders, Setting Objectives – The Business Case - Project Success and Failure - Management and Management Control. Project Evaluation:A Business Case – Project Portfolio Management – Evaluation of Individual Projects – Cost Benefit Evaluation – Risk Evaluation.

UNIT II: PROJECT PLANNING AND SELECTION OF PROJECT APPROACH

Project Planning - Introduction to Step Wise Project Planning – Step 0 to Step 10. Selection of an Appropriate Project Approach -Introduction – Build or Buy – Choosing Methodologies and Technologies – Software Processes and Process Models – Choice of Process Models – The Waterfall Model– Prototyping – other ways of categorizing prototype- Agile Methods – Extreme Programming - Selecting the Most Appropriate Process Model.

UNIT III: EFFORT ESTIMATION AND ACTIVITY PLANNING

Effort Estimation – Introduction –Estimates – Problems with Over and Under-estimate – Basis for Software Estimating – Effort Estimation Techniques – Bottom-up Estimating – Top-down Approach and Parametric Models – Expert Judgment - Estimating by Analogy – Albrecht Function Point Analysis – Function Mark II – COCOMO & COCOMO II – Cost Estimation – Staffing Pattern. Activity Planning –Introduction – Objectives of Activity Planning – When to plan – Project Schedules – Project and Activities – Sequencing and Scheduling Activities – Networking Planning Models – Formulating a Network Model– Activity on Arrow Networks.

UNIT IV: RISK MANAGEMENT, RESOURCE ALLOCATION AND MONITORING

Risk Management –Risk – Categories of Risk – A Framework for Dealing with Risk – Risk Identification – Risk Assessment – Risk Planning – Risk Management. Resource Allocation – Introduction – The Nature of Resources – Identifying Resource Requirements – Scheduling Resources. Monitoring –Creating the Framework – Collecting the Data – Review and Project Termination Review – Visualizing Progress – Cost Monitoring and Earned Value Analysis – Getting the Project Back to Target – Change Control – SCM.

UNIT V: MANAGING PEOPLE AND WORKING IN TEAMS

Managing People –Understanding Behavior – Organizational Behavior – Selecting the Right Person for the Job – Instruction in the Best Methods – Motivation – The Oldham-Hackman Job Characteristics Model – Stress – Health and Safety. Working in Teams –Introduction – Becoming a Team – Decision Making – Organization and Team Structures – Coordination Dependencies – Dispersed and Virtual Teams – Communication Genres – Communication Plans – Leadership.

TEXT BOOK

1. BOB Huges, Mike Cotterell, Rajib Mall "Software Project Management", McGraw Hill, Fifth Edition,2011.

REFERENCES

1. Futrell, "Quality software Project management", Pearson Education India.
2. Royce, "Software Project Management", Pearson Education India.

WEB REFERENCES

https://www.lynda.com/Project-Management-training-tutorials/39-0.html
www.rspa.com/spi/project-mgmt.html

COURSE OUTCOMES

Upon completion of the course students will be able to:

- Understand the activities during the project scheduling of any software application.
- Learn the risk management activities and the resource allocation for the projects.
- Apply the software estimation and recent quality standards for evaluation of the software Projects.
- Acquire knowledge and skills needed for the construction of highly reliable software project.
- Able to create reliable, replicable cost estimation that links to the requirements of project planning and managing.

CORE ELECTIVE

PAPER - 3

C. OBJECT ORIENTED SOFTWARE

COURSE OBJECTIVES

Unit – I:

Introduction to objects - module - cohesion - coupling - data encapsulation - abstract data types - information hiding - objects, - inheritance - polymorphism & dynamic binding - cohesion & coupling of objects. Reusability, protability& interoperability - reuse concepts - impediments to reuse, reuse case studies - objects & productivity - reuse during design & implementation phases - reuse & maintenance, portability, why portability, techniques for achieving portability - ihnteroperability - future trends in interoperability.

Unit – II:

Planning and estimation - planning and the software process - estimating duration and cost - components of a software project management plan - software project management plan frame work - IEEE software project management plan - planning of testing - planning of object oriented projects - training requirements - documentation standards - CASE tools for planning and estimating - testing the software project management requirements phase - requirements analysis techniques - reusing the prototyping - human factors - rapid prototyping as a specification technique - reusing the rapid prototyping - other uses of rapid prototyping - management implication of the application design (JAD) - Comparison of requirement analysis techniques - testing during requirement phase - CASE tools for the requirement phase - metrics for the requirement phase - obsertoglesby case study: requirements phase obsertoglesby case study - rapid prototype - object oriented requirements.

Unit – III:

Specification phase - specification document informal - specification - structured, systems analysis - other semi-formal techniques - entity relationship modeling - finite. state machines - Petrinets z357 - other formal techniques - comparison of specification techniques - testing during specification phase - CASE tools for the specification phase - metrics for the specification phase - obvert oglesy case study: Structured systems analysis - software project management. Object oriented analysis phase - object oriented versus structured paradigm - object oriented analysis - elevator problem - use case modeling - dynamic modeling - testing during object oriented analysis phase - case tools - software project management.

Unit – IV:

Design phase - design and abstraction - action oriented design - data flow analysis - transaction analysis - data oriented design - object oriented design - elevator problem - formal techniques for detail designs - real time design techniques - testing - case tools - metrics - object oriented design.- Implementation phase: choice or programming language - forth generation language - good programming practice - coding standards - module reuse - module test case selection - black box - glass box module testing techniques - comparison clean room - potential problems when testing objects - management aspects of module testing- CASE tools for implementation phase.

Unit – V:
Implementation and integration phase - testing - graphical user interfaces - product testing - acceptance testing - case tools for this phase - integration environments for business applications - public tools infrastructure - potential problems with environments. Maintenance phase - why maintenance is necessary - case study - management - maintenance of object oriented software - maintenance skill versus development skills - reverse engineering - testing - case tools.

TEXT BOOK

1. Stephen R. Schach - Classical and Object oriented Software Engineering 4th Edition - McGraw Hill
2. Ivar Jacobson - Object Oriented Software Engineering - Addison Wesley.

REFERENCES

1. Grady Booch, Object Oriented Analysis and Design, Addison-Wesley. 5 ed 2009
2. Grady Booch, James Rumbaugh and Ivar Jacobson, Unified Modeling Language Guide, Addison-Wesley. 5ed 2009
3. Erich Gamma et al., Design Patterns: Elements of Reusable OO Software, Addison-Wesley.5 ed 2010
4. Michael L. Scott, Programming Language Pragmatics, Morgan-Kaufmann.5 ed 2006
5. Kim Bruce, Foundations of Object Oriented Languages, Prentice-Hall.6 2011

WEB REFERENCES

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

COURSE OUTCOMES

On successful completion of course, learners will be able to:

- Understand and demonstrate basic knowledge in object oriented software
- Identify requirements, analyze and prepare models.
- Plan, schedule and track the progress of the projects.
- Design & develop the software projects
- Identify risks, manage the change to assure quality in software projects.
- Apply testing principles on software project and understand the maintenance concepts.

OPEN ELECTIVE

PAPER - 3

(to choose one out of 3)

A. INTRODUCTION TO 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 AND STRUCTURES

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.

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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.

OPEN ELECTIVE

PAPER - 3

B. INTRODUCTION TO C#

COURSE OBJECTIVES

- To know the differences between desktop and web application.
- To construct classes, methods, and accessor and instantiate objects.
- To create and manipulate GUI components in C#.
- To code solutions and compile C# projects within the .NET framework.
- To build own desktop application with Database

UNIT - I: INTRODUCTION TO C#

Introduction to .NET – Features of C# - Data Types – Value Types – Reference Types - Variables and Constants – Declaring – Assigning values – variables of nullable types – Operators – Type Conversions – Implicit and Explicit Type Conversions – Arrays – Single Dimensional and Multidimensional – Control Flow Statements – Selection – Iteration and Jump – Classes and Objects – Access Modifiers – Defining a Class – Variables – Properties and Methods – Creating Objects – Inheritance – Polymorphism- Constructor and Destructors.

UNIT - II: WINDOWS FORMS

Windows Forms – Form Class – Common Operations on Forms – Creating a Message Box – Handling Events – Mouse Events – Keyboard Events – Common Controls in Windows Forms – Label – TextBox – Button – Combo Box – List Box – Check Box – Radio Button – Group Box – Picture Box – Timer – Open File Dialog – Save File Dialog – Font Dialog – Color Dialog – Print Dialog – Tree View – Menu.

UNIT - III: DELEGATES AND EVENTS

Delegates – Declaring a Delegate – Defining Delegate Methods – Creating and Invoking Delegate Objects – Multicasting with Delegates – Events – Event Sources – Event Handlers – Events and Delegates.

UNIT - IV: REFLECTION AND REMOTING

Life Cycle of threads-Using Reflection – Reflecting the Members of a Class - Dynamic Loading and Reflection - .NET Remoting – Architecture – Hosting of Objects – Single Ton and Single Call – Remoting Server – Remoting Client.

UNIT - V: DATABASE

Creating Connection String – Creating a Connection to a Database – Creating a Command Object – Working with Data Adapters – Using Data Reader to work with Databases – Using Dataset.

TEXT BOOKS

1. Vikas Gupta , “Comdex .NET Programming “ , Dream Tech Press, New Delhi, 2011
2. Kogent Solutions, “ C# 2008 Programming Black Book”, Dream Tech Press, New Delhi, Platinum Edition, 2009

REFERENCES

1. Rebecca M.Riordon, “Microsoft ADO .Net 2.0 Step by Step”, Prentice Hall of India Private Limited, New Delhi, 2007
2. David S.Platt , “Introducing Microsoft .Net”, Prentice Hall of India(Private) Limited, Third Edition, New Delhi, 2006

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http://www.indiabix.com/c-sharp-programming/questions-and-answers/
https://www.wiziq.com/online-tests/43860-c-basic-quiz
http://www.withoutbook.com/OnlineTestStart.php?quizId=71
http://www.compileonline.com/compile_csharp_online.php
http://www.ideone.com

COURSE OUTCOMES

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

- To know the differences between desktop application and web application.
- To construct classes, methods, and access modifier and instantiate objects.
- To create and manipulate GUI components in C# for windows application.
- To code solutions and compile C# projects within the .NET framework.
- To build the desktop application with Database.

OPEN ELECTIVE

PAPER - 3

C. INTRODUCTION TO PYTHON

COURSE OBJECTIVES

- To know the basics of algorithmic problem solving
- To read and write simple Python programs.
- To develop Python programs with conditionals and loops.
- To define Python functions and call them.
- To use Python data structures – lists, tuples, dictionaries.
- To do input/output with files in Python.

UNIT - I: OVERVIEW

Introduction to Python: Features of Python - How to Run Python – Identifiers - Reserved Keywords - Variables - Comments in Python - Indentation in Python - Multi-Line Statements - Multiple Statement Group (Suite) – Quotes in Python - Input, Output and Import Functions - Operators. Data Types and Operations: Numbers-Strings-List-Tuple-Set-Dictionary-Data type conversion.

UNIT - II: FLOW CONTROL & FUNCTIONS

Flow Control: Decision Making-Loops-Nested Loops-Types of Loops. Functions: Function Definition-Function Calling - Function Arguments - Recursive Functions - Function with more than one return value.

UNIT - III: MODULES, PACKAGES AND FILE HANDLING

Modules and Packages: Built-in Modules - Creating Modules - import Statement - Locating Modules - Namespaces and Scope - The dir() function - The reload() function - Packages in Python - Date and Time Modules. File Handling: Opening a File - Closing a File - Writing to a File – Reading from a File - File Methods - Renaming a File - Deleting a File - Directories in Python.

UNIT - IV: OBJECT ORIENTED PROGRAMMING

Class Definition - Creating Objects - Built-in Attribute Methods - Built-in Class Attributes - Destructors in Python Encapsulation - Data Hiding- Inheritance - Method Overriding Polymorphism. Exception Handling: Built-in Exceptions - Handling Exceptions - Exception with Arguments- Raising Exception - User-defined Exception - Assertions in Python

UNIT - V: REGULAR EXPRESSIONS & WEB APPLICATIONS

Regular Expressions: The match() function - The search() function - Search and Replace - Regular Expression Modifiers: Option Flags - Regular Expression Patterns - Character Classes - Special Character Classes - Repetition Cases - findall() method - compile() method. Web Application Framework- Django Architecture- Starting development- Case Study: Blogging App.

TEXT BOOKS

1. Jeeva Jose and P. SojanLal, “Introduction to Computing and Problem Solving with Python”, Khanna Book Publising Co. (P) Ltd., 2016.
2. ArshdeepBahga, Vijay Madisetti, “Cloud Computing: A Hands – On Approach” Universities press (India) Pvt. limited 2016.

REFERENCES

1. Wesley J. Chun, “Core Python Programming”, Second Edition, Prentice Hall Publication, 2006.
2. Timothy A Budd, “Exploring Python”, Tata McGraw Hill, New Delhi, ISBN: 780071321228

WEB REFERENCES

www.learnpython.org/
https://www.codecademy.com/learn/python
https://www.Codementor.io
https://www.Python.org

COURSE OUTCOMES

Upon completion of the course, students will be able:

- To explore the fundamental concepts of Python
- To understand Basics of Python programming language
- To solve simple problems using Python
- To acquire fundamental knowledge and skills on Python Programming
- To understand the nuances of this language.
- To know the usage of modules and packages in Python
- To familiarize with file concepts in Python
- To familiarize with web concepts using Python.

SEMESTER IV

PAPER - 10

ENTERPRISE JAVA PROGRAMMING

COURSE OBJECTIVES

- To expose the complete knowledge of MVC, Java server faces and Enterprise java bean.
- Develop Enterprise web application using EJB.

UNIT – I:CONTROLLING WEB APPLICATION BEHAVIOR WITH WEB.XML
Understanding the purpose of web.xml - Customizing URLs - Turning off default URLs - Initializing servlets and JSP pages - Preloading servlets and JSP pages - Declaring filters - Designating welcome pages and error pages - Restricting access to Web resources.

UNIT – II: JAVA SERVER FACES *(JSF)*
JSP Benefits, Framework roles, Simple JSF application, User Interface Component Model, Navigational Model, Life Cycle of JSF page, Using JSF in JSP Pages – Setting up a page, using core tags, using HTML tags, using localized messages, Using converters.

UNIT – III:DEVELOPING WITH JAVASERVER FACES TECHNOLOGY
Registering listeners on components, validators, binding component values to external data sources, referencing a backing Bean method, using custom objects writing component properties, performing localization, creating custom converter, implementing event listener, creating custom validator, writing backing Bean methods.

UNIT – IV: ENTERPRISE JAVA BEANS (EJB)
Introduction to Enterprise Beans, Session Bean, Entity Bean, Message driven Bean, defining clients access with interfaces, contents of an enterprise Bean, life cycle of enterprise Bean, creation of Enterprise Bean, application client, web client, other Enterprise Bean features, handling exceptions, mapping table relationships for Bean managed persistence, primary keys for bean managed persistence, container managed persistence – primary key for container managed persistence, Message driven Bean example – applicant client and message driven Bean class.

UNIT – V: JAVA MESSAGE SERVICE API
Basic JMS API concepts – architecture, messaging domains – consumption- JMS API programming model – administered objects - connections - sessions - message producers-consumers – messages - exception handling - JMS client applications - creating robust JMS applications - Using JMS API in J2EE application.

TEXT BOOK

Unit I

1. Marty Hall, Larry Brown, YaakovChaikin "Core Servlets and JavaServer Pages, Volume 2:advanced Technologies", 2nd Edition, Prentice Hall PTR.

Unit II, III, IV & V

2. Stephanie Bodoffetl., "The J2EE™ Tutorial", Pearson Education, 2005.

REFERENCES

1. David Geary, Cay Horstmann ,"Core JavaServer™ Faces",2nd Edition, Prentice Hall,2007.
2. Bill Dudney B001IXQ2TG, Jonathan Lehr, Bill Willis, LeRoy Mattingly, "Mastering JavaServer Faces",Wiley publications.
3. Debu Panda, Reza Rahman, Derek Lane,"EJB 3 in Action", Manning publications.

WEB REFERENCES

Online Tutorial

www.corejsf.com
www.roseindia.net
www.r4r.co.in
www.mkyong.com
www.java2s.com.

COURSE OUTCOMES

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

- Develop JSF page using various techniques
- Develop applications using Java Beans
- Working with Java API's for creating applications.

PAPER - 11

PYTHON PROGRAMMING

COURSE OBJECTIVES

- To know the basics of algorithmic problem solving
- To read and write simple Python programs.
- To develop Python programs with conditionals and loops.
- To define Python functions and call them.
- To use Python data structures – lists, tuples, dictionaries.
- To do input/output with files in Python.

UNIT - I: OVERVIEW

Introduction to Python: Features of Python - How to Run Python – Identifiers - Reserved Keywords - Variables - Comments in Python - Indentation in Python - Multi-Line Statements - Multiple Statement Group (Suite) – Quotes in Python - Input, Output and Import Functions - Operators. Data Types and Operations: Numbers-Strings-List-Tuple-Set-Dictionary-Data type conversion.

UNIT - II: FLOW CONTROL & FUNCTIONS

Flow Control: Decision Making-Loops-Nested Loops-Types of Loops. Functions: Function Definition-Function Calling - Function Arguments - Recursive Functions - Function with more than one return value.

UNIT - III: MODULES, PACKAGES AND FILE HANDLING

Modules and Packages: Built-in Modules - Creating Modules - import Statement - Locating Modules - Namespaces and Scope - The dir() function - The reload() function - Packages in Python - Date and Time Modules. File Handling: Opening a File - Closing a File - Writing to a File – Reading from a File - File Methods - Renaming a File - Deleting a File - Directories in Python.

UNIT - IV: OBJECT ORIENTED PROGRAMMING

Class Definition - Creating Objects - Built-in Attribute Methods - Built-in Class Attributes - Destructors in Python Encapsulation - Data Hiding- Inheritance - Method Overriding Polymorphism. Exception Handling: Built-in Exceptions - Handling Exceptions - Exception with Arguments- Raising Exception - User-defined Exception - Assertions in Python

UNIT - V: REGULAR EXPRESSIONS & WEB APPLICATIONS

Regular Expressions: The match() function - The search() function - Search and Replace - Regular Expression Modifiers: Option Flags - Regular Expression Patterns - Character Classes - Special Character Classes - Repetition Cases - findall() method - compile() method. Web Application Framework- Django Architecture- Starting development- Case Study: Blogging App.

TEXT BOOKS

1. Jeeva Jose and P. SojanLal, “Introduction to Computing and Problem Solving with Python”, Khanna Book Publising Co. (P) Ltd., 2016.
2. ArshdeepBahga, Vijay Madisetti, “Cloud Computing: A Hands – On Approach” Universities press (India) Pvt. limited 2016.

REFERENCES

1. Wesley J. Chun, “Core Python Programming”, Second Edition, Prentice Hall Publication, 2006.
2. Timothy A Budd, “Exploring Python”, Tata McGraw Hill, New Delhi, ISBN: 780071321228

WEB REFERENCES

www.learnpython.org/
https://www.codecademy.com/learn/python
https://www.Codementor.io
https://www.Python.org

COURSE OUTCOMES

Upon completion of the course, students will be able:

- To explore the fundamental concepts of Python
- To understand Basics of Python programming language
- To solve simple problems using Python
- To acquire fundamental knowledge and skills on Python Programming
- To understand the nuances of this language.
- To know the usage of modules and packages in Python
- To familiarize with file concepts in Python
- To familiarize with web concepts using Python.

PAPER - 12

WEB APPLICATION USING C#

COURSE OBJECTIVES

- To know the differences between desktop and web application.
- To construct classes, methods, and accessor and instantiate objects.
- To create and manipulate GUI components in C#.
- To code solutions and compile C# projects within the .NET framework.
- To build own desktop application with Database

UNIT- I: INTRODUCTION TO ASP.NET AND WEB FORMS

Developing ASP.NET Applications - ASP.NET File Types - The bin Directory - Application Updates - A Simple Application from Start to Finish-web.config file Web Form Fundamentals - A Simple Page Applet - The Problem With Response.Write - Server Controls - HTML Server Controls - ViewState - The HTML Control Classes - Events - Event Handling Changes - The Currency Converter application-Adding Support for Multiple Currencies - Adding Linked Images - Setting Styles – A Deeper Look at HTML control classes-HTML control events-The HTML control Base class-The HtmContainerControl Class-The HtmlInputControl Class-The Page class-The Controls collection-The HttpRequest Class-The HttpResponse Class-The ServerUtility Class-Assessing HTML Server controls

UNIT - II: WEB CONTROLS

Web Controls - Stepping Up to web Controls - Basic Web Control Classes - The web Control Tags - The WebControl Base Class - Units Enumerated Values - Colors - Fonts - List Controls - Table Controls - AutoPostBack and Web Control Events - How Postback Events Work - The Page Lifecycle - The Greeting Card Applet - Validation and rich Controls- The Calendar Control-Formatting the Calendar-restricting Dates- The AdRotator control-The Wizard control-Validation-The Validation Controls -The Validation Process-The Validator Class-A Simple Validation Example –Sever side example-Manual Validation-Understanding Regular Expressions-Literals and MetaCharacters-Finding a Regular expression- A Validated Customer Form

UNIT - III: COMPONENT BASED PROGRAMMING

Introduction – Creating a Simple Component – Properties and State – Database Components – Consuming the Database Component – Enhancing the Component with Error Handling – Aggregate Information – Data Objects.

UNIT - IV: CUSTOM CONTROLS

User Controls – Creating a Simple User Control – Visual Studio.NET Custom Control Support – Independent User Controls – Integrated User Controls – User Control Events – Limitations – Deriving Custom Controls.

UNIT - V: DATABASE ACCESS WITH COMMAND, ADAPTER AND XML

ADO.NET Data Access - About the ADO.NET Example - Obtaining the Sample Database - Simple Data Access - Simple Data Update - Importing the Namespaces - Creating a Connection - The Connection String SQL - Making the Connection - Defining the Select Command - Using a Command with a DataReader - Updating Data - Using Update - Insert - and Delete Commands - Accessing Disconnected Data - Selecting Disconnected Data - Selecting Multiple Tables - Modifying Disconnected Data - Modifying and Deleting Rows - Adding Information - to a DataSet - Updating Disconnected Data - The Command Builder - Updating a DataTable - Controlling Updates - An Update Example – Using XML - XML's Hidden Role in .NET - XML Basics - Attributes - Comments - The XML Classes - the XML TextWriter - The XML Text Reader - Working with XML Documents - Reading an XML Document - Searching an XML Document - XML Validation – CreatingXML Schema -XSD Documents - Validating an XML File.

TEXT BOOKS

1. Mathew MacDonald, "ASP.NET: The Complete Reference", Tata McGraw Hill Publishing Company Ltd., New Delhi, 2006
2. Dino Eesposito, "Introducing Microsoft ASP.NET 2.0", AsokeK.Ghosh, Prentice Hall of India, Eastern Economy Edition, New Delhi, 2006

REFERENCE

1. Stephen Walther,"ASP.NET 3.5 Unleashed", Pearson Education, Dorling Kindersley Pvt. Ltd, Second Edition, 2008

WEB REFERENCES

1. http://csharp.net-tutorials.com/index.php
2. http://csharp.net-tutorials.com/classes/introduction/
3. http://www.homeandlearn.co.uk/csharp/csharp.html
4. http://www.indiabix.com/c-sharp-programming/questions-and-answers/
5. https://www.wiziq.com/online-tests/43860-c-basic-quiz
6. http://www.withoutbook.com/OnlineTestStart.php?quizId=71
7. http://www.compileonline.com/compile_csharp_online.php
8. http://www.ideone.com

COURSE OUTCOMES

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

- To know the differences between desktop application and web application.
- To construct classes, methods, and access modifier and instantiate objects.
- To create and manipulate GUI components in C# for windows application.
- To code solutions and compile C# projects within the .NET framework.
- To build the desktop application with Database.

PRACTICAL-10

ENTERPRISE JAVA PROGRAMMING

1. Simple JSP Application
2. JSF in JSP Pages
3. Using all HTML render kit
4. Using all Core render kit
5. Creating Enterprise Bean
6. Creating Web Client
7. Using Session Bean
8. Bean Managed Persistence and Container Managed Persistence
9. Creating Simple JMS Client Applications
10. Creating Robust JMS Applications

PRACTICAL-11

PYTHON PROGRAMMING

1. Working with numbers
2. Implementing String operations
3. Working with Tuples and Set
4. Implementation of Dictionaries
5. Demonstrating List Operations.
6. Flow Control and Functions
7. Modules and Packages
8. File handling
9. Object Oriented Programming
10. Exception Handling and Regular Expressions

PRACTICAL-12

WEB APPLICATIONS USING C#

1. Web Configuration File
2. Viewstate
3. HTML Control Classes, Control Events, Container and Input Control Classes,
4. Web Control Classes & Control Tags
5. Validation Controls
6. Rich Controls
7. Data Access
8. Components
9. Custom Controls
10. User Controls

CORE ELECTIVE

PAPER - 4

(to choose one out of 3)

A. INTERNET OF THINGS

OBJECTIVES

- To design and Develop IOT based solution for real world applications
- To realize the evolution of Internet in Mobile Devices, Cloud & Sensor Networks
- To understand the building blocks of Internet of Things and its characteristics.
- To understand the concepts of IOT and its application.

UNIT - I: INTRODUCTION

Introduction and Definition of Internet of Things, IoT Growth – A Statistical View, Application Areas of IoT, Characteristics of IoT, Things in IoT, IoT Stack, Enabling Technologies, IoT Challenges, IoT Levels, Is Cyber Physical System the same as IoT? Is WSN the same as IoT?

UNIT - II: INTRODUCTION TO SENSORS, MICROCONTROLLERS, AND THEIR INTERFACING

Introduction to Sensor Interfacing, Types of Sensors, Controlling Sensors through Webpages, Microcontrollers: A Quick Walkthrough, ARM. Protocols for IoT – Messaging and Transport Protocols, Messaging Protocols (MQTT, CoAP, AMQP), Transport Protocols (Li-Fi, BLE).

UNIT - III: PROTOCOLS FOR IOT

Addressing and Identification, Internet Protocol Version 4 (IPv4), Internet Protocol Version 6 (IPv6), Uniform Resource Identifier (URI). Cloud for IoT - Introduction, IoT with Cloud – Challenges, Selection of Cloud Service Provider for IoT Applications: An Overview, Introduction to Fog Computing, Cloud Computing: Security Aspects, Case Study: How to use Adafruit Cloud? Application of Data Analytics in IOT.

UNIT - IV: APPLICATION BUILDING WITH IOT

Introduction, Smart Perishable Tracking with IoT and Sensors, Smart Healthcare – Elderly Fall Detection with IoT and Sensors, Smart Inflight Lavatory Maintenance with IoT, IoT–Based Application to Monitor Water Quality, Smart Warehouse Monitoring – Let the Drone Fly for You, Smart Retail – IoT Possibilities in the Retail Sector, Prevention of Drowsiness of Drivers by IoT-Based Smart Driver Assistance Systems, System to Measure Collision Impact in an Accident with IoT.

UNIT - V: GETTING FAMILIARIZED WITH ARDUINO IDE

Architecture, Arduino Programming, A Simple Application, Arduino Playground. Getting Familiarized with Raspberry Pi - Story behind Raspberry Pi, Architecture, Compatible Peripherals, Add-Ons, and Accessories, Operating System for Raspberry Pi, Setting up Raspberry Pi, Initial Configuration for Raspberry Pi, Linux Based Softwares in Raspberry Pi, Application Development with Raspberry-Pi – A Quick Walk Through.

TEXT BOOK

1. Shriram K Vasudevan, Abhishek S Nagarajan, RMD Sundaram, Internet of Things, Wiley, India, 2019.

REFERENCES

1. Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands-on Approach)", 1st Edition, VPT, 2014.
2. Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013.

WEB REFERENCES

1. https://www.coursera.org/courses?query=iot
2. https://online.stanford.edu/courses/xee100-introduction-internet-things
3. https://www.tutorialspoint.com/internet_of_things/index.htm

OUTCOMES

By the end of the course, the student shall be able to

- Design and Develop IOT based solution for real world applications
- Realize the evolution of Internet in Mobile Devices, Cloud & Sensor Networks
- Understand building blocks of Internet of Things and its characteristics.
- Understand the concept of IOT and its application.

CORE ELECTIVE

PAPER - 4

B. CLOUD COMPUTING

COURSE OBJECTIVES

- To introduce the broad perceptive of cloud architecture and model.
- To understand the concept of parallel and distributed computing
- To be familiar with the different technologies.
- To understand the features of virtualization.
- To learn to design the trusted cloud Computing system with different cloud platforms

UNIT - I: INTRODUCTION

Cloud Computing at a Glance, The Vision of Cloud Computing, Defining a Cloud, Cloud Computing Reference Model, Characteristics and Benefits, Challenges Ahead, Historical Developments - Distributed Systems, Virtualization, Web 2.0, Service-Oriented Computing, Utility-Oriented Computing, Building Cloud Computing Environments - Application Development, Infrastructure and System Development, Computing Platforms and Technologies - Amazon Web Services (AWS), Google AppEngine, Microsoft Azure, Hadoop, Force.com and Salesforce.com

UNIT – II: PRINCIPLES OF PARALLEL AND DISTRIBUTED COMPUTING

Parallel vs. Distributed Computing , Elements of Parallel Computing - Hardware Architectures for Parallel Processing, Approaches to Parallel Programming, Levels of Parallelism, Laws of Caution, Elements of Distributed Computing - General Concepts and Definitions, Components of a Distributed System, Architectural Styles for Distributed Computing, Models for Inter-Process Communication, Technologies for Distributed Computing - Remote Procedure Call, Distributed Object Frameworks, Service Oriented Computing.

Virtualization - Introduction, Characteristics of Virtualized Environments, Taxonomy of Virtualization Techniques, Execution Virtualization, and Other Types of Virtualization, Virtualization and Cloud Computing, Pros and Cons of Virtualization, Technology Examples - Xen: Paravirtualization, VMware: Full Virtualization, Microsoft Hyper-V

UNIT - III: CLOUD COMPUTING ARCHITECTURE

Introduction, Cloud Reference Model - Architecture, Infrastructure / Hardware as a Service, Platform as a Service, Software as a Service, Types of Clouds - Public Clouds, Private Clouds, Hybrid Clouds, Community Clouds, Economics of the Cloud, Open Challenges - Cloud Definition, Cloud Interoperability and Standards, Scalability and Fault Tolerance, Security, Trust, and Privacy, Organizational Aspects. High-Throughput Computing: Task Programming - Task Computing, Characterizing a Task, Computing Categories, Frameworks for Task Computing, Task-based Application Models, Aneka Task-Based Programming.

UNIT - IV: ANEKA

Cloud Application Platform - Framework Overview, Anatomy of the Aneka Container - From the Ground Up: Platform Abstraction Layer, Fabric Services, Foundation Services, Application Services, Building Aneka Clouds - Infrastructure Organization Logical Organization, Private Cloud Deployment Mode, Public Cloud Deployment Mode, Hybrid Cloud Deployment Mode, Cloud Programming and Management - Aneka SDK , Management Tools. Concurrent Computing: Thread Programming- Introducing Parallelism for Single Machine Computation, Programming Applications with Threads - Techniques for Parallel Computation with Threads, Multithreading with Aneka - Introducing the Thread Programming Model, Aneka Thread vs. Common Threads, Programming Applications with Aneka Threads - Aneka Threads Application Model, Domain Decomposition: Matrix MultiplicationFunctional Decomposition: Sine, Cosine, and Tangent.

UNIT - V: CLOUD PLATFORMS IN INDUSTRY

Amazon Web Services - Compute Services, Storage Services, Communication Services, Google AppEngine - Architecture and Core Concepts, Application Life-Cycle, Cost Model, Observations, Microsoft Azure - Azure Core Concepts - SQL Azure - Windows Azure Platform Appliance. Cloud Applications - Scientific Applications - Healthcare: ECG Analysis in the Cloud - Biology: Protein Structure Prediction - Biology: Gene Expression Data Analysis for Cancer Diagnosis - Geoscience: Satellite Image Processing, Business and Consumer Applications - CRM and ERP - Productivity - Social Networking - Media Applications - Multiplayer Online Gaming. Advanced Topics in Cloud Computing - Energy Efficiency in Clouds, Market Based Management of Clouds, Federated Clouds / InterCloud, Third Party Cloud Services

TEXT BOOKS

1. Rajkumar Buyya, Christian Vecchiola, and S. ThamaraiSelvi. Mastering cloud computing: foundations and applications programming. Tata McGraw Hill Education Private Limited, New Delhi , 2013

REFERENCES

1. Rittinghouse and Ransome, Cloud Computing: Implementation, Management, and Security, CRC Press, 2016.
2. Michael Miller "Cloud Computing Web based application that change the way you work and collaborate online". Pearson edition, 2008.
3. Kris Jamsa, Cloud Computing: SaaS, PaaS, IaaS, Virtualization, Business Models, Mobile, Security and More, Jones & Bartlett Learning, 2012.

WEB REFERENCES

https://www.ibm.com/cloud

https://www.javatpoint.com/cloud-computing-tutorial

COURSE OUTCOMES

Upon Completion of the syllabus the students are able to know:

- Introduce the broad perceptive of cloud architecture and model.
- Understand the concept of parallel and distributed computing
- Understand the different technologies.
- Understand the features of virtualization.
- Learn to design the trusted cloud Computing system with different cloud platform

CORE ELECTIVE

PAPER - 4

C. BIG DATA ANALYTICS

COURSE OBJECTIVES

- To understand the needs for Big Data and its environments.
- To learn the basic requirements of Big Data Technologies.
- To expose the knowledge of MapReduce programming framework(Hadoop).
- To be familiar with with NoSQL DB's Cassandra and MongoDB
- To understand Hive and Pig technologies for analyzing the Big Data.

UNIT – I: INTRODUCTION TO BIG DATA

Data, Characteristics of data and Types of digital data: Unstructured, Semi-structured and Structured, Sources of data, Working with unstructured data, Evolution and Definition of big data, Characteristics and Need of big data, Challenges of big data, Data environment versus big data environment

UNIT – II: BIG DATA ANALYTICS

Overview of business intelligence, Data science and Analytics, Meaning and Characteristics of big data analytics, Need of big data analytics, Classification of analytics, Challenges to big data analytics, Importance of big data analytics, Basic terminologies in big data environment

UNIT – III: BIG DATA TECHNOLOGIES AND DATABASES

Introduction to NoSQL, Uses, Features and Types, Need, Advantages, Disadvantages and Application of NoSQL, Overview of NewSQL, Comparing SQL, NoSQL and NewSQL, Introduction to MongoDB and its needs, Characteristics of MongoDB, Introduction of apache cassandra and its needs, Characteristics of Cassandra

UNIT – IV: HADOOP FOUNDATION FOR ANALYTICS

History, Needs, Features, Key advantage and Versions of Hadoop, Essential of Hadoop ecosystems, RDBMS versus Hadoop, Key aspects and Components of Hadoop, Hadoop architectures

UNIT – V: HADOOPMAPREDUCE AND YARN FRAMEWORK:

Introduction to MapReduce, Processing data with Hadoop using MapReduce, Introduction to YARN, Components, Need and Challenges of YARN, Dissecting YARN, MapReduce application, Data serialization and Working with common serialization formats, Big data serialization formats

TEXT BOOK

Seema Acharya and Subhashini Chellappan, "Big Data and Analytics", Wiley India Pvt. Ltd., 2016

REFERENCE BOOKS

1. “Big Data” by Judith Hurwitz, Alan Nugent, Dr. Fern Halper and Marcia Kaufman, Wiley Publications, 2014.
2.“Big Data Imperatives : Enterprise Big Data Warehouse, BI Implementations and Analytics” by Soumendra Mohanty, Madhu Jagadeesh and Harsha Srivatsa, Apress Media, Springer Science + Business Media New York, 2013
3. “Mining of Massive Datasets”, Anand Rajaraman, Jure Leskovec, Jeffery D. Ullman, Springer, July 2013.
4. “Hadoop: The definitive Guide”, Tom White, O'Reilly Media, 2010.

WEB REFERENCES

http://strata.oreilly.com/2010/09/the-smaq-stack-for-big-data.html
http://blogs.computerworld.com/18840/big_data_smaq_down_storage_mapreduce_and_query

COURSE OUTCOMES

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

- Learn about types of digital data and big data
- Gain knowledge of various Big data analtics and its Technologies
- Study about various NoSQL databases and management techniques
- Work with NoSQL databases such as MongoDB and Cassendra
- Design Big data queries using Hive and Pig.

OPEN ELECTIVE

PAPER - 4

(to choose one out of 3)

A. INTRODUCTION TO DATABASE SYSTEM

COURSE OBJECTIVES

- To have a broad understanding of database concepts and database management system software
- To have a high-level understanding of major DBMS components and their function
- To be able to model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model.
- To be able to write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.
- To be able to program a data-intensive application using DBMS APIs.

UNIT-I: INTRODUCTION

File System Vs. DBMS - Database System Applications - View of Data-Database language - Database design - ER Model _ Relational Model - Network Data Model - Hierarchical Data Model - Data Storage & Querying - Data Architecture.

UNIT-II: RELATIONAL MODEL

Relational Model - Structure of Relational Databases - Relational Algebra and Calculus - SQL - Basic Structure - Set Operations - Aggregate Functions - Null Values - Nested Queries - Complex Queries - Views - Modification of the Database - Advanced SQL - Triggers.

UNIT-III: FUNCTIONAL DEPENDENCIES

Functional Dependencies - Features of Relational designs - Decomposition and Normalization using Functional Dependencies and Multivalued Dependencies - Join dependencies- Domain key Normal form.

UNIT- IV: PHYSICAL STORAGE MEDIA

Overview of Physical Storage Media - Magnetic disks - RAID - tertiary Storage - File Organization - Organization of records in Files - Indexing and Hashing - Ordered Indices - B+ -Tree Index Files - B-Tree Index Files - multiple Key Access - Static and Dynamic Hashing - Query Processing - Transaction Management - Transactions - Concurrency.

UNIT-V: DISTRIBUTED DATABASES

Distributed Databases - Homogeneous and Heterogeneous Databases - Distributed Data Storage - Distributed Transactions - Commit Protocols - Concurrency Control - Object Based Databases - Complex Data types - Structured Types and Inheritance in SQL – Object identity and Reference - Types in SQL - XML - structure of XML data - XML Document - Schema - Querying and Transformation - Data Mining and Data Warehousing.

TEXT BOOK

Abraham Silberschatz, Henry F. Korth and S. Sudarshan- "Database System Concepts", FifthEdition,McGraw-Hill,2006.

REFERENCES

1. Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems", Tata McGraw-Hill Publishing Company, 2003.
2. RamezElmasri and Shamkant B. Navathe, "Fundamental Database Systems", Third Edition, Pearson Education, 2003.
3. Hector Garcia–Molina, Jeffrey D.Ullman and Jennifer Widom- "Database System Implementation"- Pearson Education- 2000.
4. Narang,"Database Management Systems", 2nd ed., PHI.

WEB REFERENCES

https://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm
http://www.rjspm.com/PDF/BCA-428%20Oracle.pdf
http://kadakiaeducation.edu.in/Course/BCA/Course%20Material/RDBMS.pdf

COURSE OUTCOMES

On completion of this course students are able to:

- Have a broad understanding of database concepts and database management system software
- Have a high-level understanding of major DBMS components and their function
- Model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model.
- Write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.
- Program a data-intensive application using DBMS APIs.

OPEN ELECTIVE

PAPER - 4

B. INTRODUCTION TO IOT

OBJECTIVES

- To design and Develop IOT based solution for real world applications
- To realize the evolution of Internet in Mobile Devices, Cloud & Sensor Networks
- To understand the building blocks of Internet of Things and its characteristics.
- To understand the concepts of IOT and its application.

UNIT - I: INTRODUCTION

Introduction and Definition of Internet of Things, IoT Growth – A Statistical View, Application Areas of IoT, Characteristics of IoT, Things in IoT, IoT Stack, Enabling Technologies, IoT Challenges, IoT Levels, Is Cyber Physical System the same as IoT? Is WSN the same as IoT?

UNIT - II: INTRODUCTION TO SENSORS, MICROCONTROLLERS, AND THEIR INTERFACING

Introduction to Sensor Interfacing, Types of Sensors, Controlling Sensors through Webpages, Microcontrollers: A Quick Walkthrough, ARM. Protocols for IoT – Messaging and Transport Protocols, Messaging Protocols (MQTT, CoAP, AMQP), Transport Protocols (Li-Fi, BLE).

UNIT - III: PROTOCOLS FOR IOT

Addressing and Identification, Internet Protocol Version 4 (IPv4), Internet Protocol Version 6 (IPv6), Uniform Resource Identifier (URI). Cloud for IoT - Introduction, IoT with Cloud – Challenges, Selection of Cloud Service Provider for IoT Applications: An Overview, Introduction to Fog Computing, Cloud Computing: Security Aspects, Case Study: How to use Adafruit Cloud? Application of Data Analytics in IOT.

UNIT - IV: APPLICATION BUILDING WITH IOT

Introduction, Smart Perishable Tracking with IoT and Sensors, Smart Healthcare – Elderly Fall Detection with IoT and Sensors, Smart Inflight Lavatory Maintenance with IoT, IoT– Based Application to Monitor Water Quality, Smart Warehouse Monitoring – Let the Drone Fly for You, Smart Retail – IoT Possibilities in the Retail Sector, Prevention of Drowsiness of Drivers by IoT-Based Smart Driver Assistance Systems, System to Measure Collision Impact in an Accident with IoT.

UNIT - V: GETTING FAMILIARIZED WITH ARDUINO IDE

Architecture, Arduino Programming, A Simple Application, Arduino Playground. Getting Familiarized with Raspberry Pi - Story behind Raspberry Pi, Architecture, Compatible Peripherals, Add-Ons, and Accessories, Operating System for Raspberry Pi, Setting up Raspberry Pi, Initial Configuration for Raspberry Pi, Linux Based Softwares in Raspberry Pi, Application Development with Raspberry-Pi – A Quick Walk Through.

TEXT BOOK

1. Shriram K Vasudevan, Abhishek S Nagarajan, RMD Sundaram, Internet of Things, Wiley, India, 2019.

REFERENCES

1. Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands-on Approach)", 1stEdition, VPT, 2014.
2. Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013.

WEB REFERENCES

1. https://www.coursera.org/courses?query=iot
2. https://online.stanford.edu/courses/xee100-introduction-internet-things
3. https://www.tutorialspoint.com/internet_of_things/index.htm

OUTCOMES

By the end of the course, the student shall be able to

- Design and Develop IOT based solution for real world applications
- Realize the evolution of Internet in Mobile Devices, Cloud & Sensor Networks
- Understand building blocks of Internet of Things and its characteristics.
- Understand the concept of IOT and its application.

OPEN ELECTIVE

PAPER - 4

C. INTRODUCTION TO MOBILE APPLICATION

COURSE OBJECTIVES

- To know the basis of Android application and development environment
- To able to develop simple and professional application
- To get ready for the job opportunity in mobile application development

UNIT - I: INTRODUCTION TO ANDROID

History of Android Platform- Android APIs- Android Architecture Application Framework- Features of Android- Android Applications- Application Components - Manifest File- Downloading and Installing Android and Android SDK - Setting up Android Virtual and physical Device - Exploring the Development Environment - The Java Perspective Using Eclipse - DDMS Perspective - Command-Line Tools- Developing and Executing the First Android Application - Using Eclipse IDE to Create an Application - Running Your Application - Exploring the Application - Using Command - Line Tools.

UNIT – II: ACTIVITIES, INTENTS AND FRAGMENTS

Working with Activities- Creating an Activity- Starting an Activity – Managing the Life cycle of an Activity - Applying Themes and Styles to an Activity- Displaying a Dialog in the Activity - Hiding the title of the activity- Using Intents-Exploring Intent Objects- Exploring Intent Resolution- Exploring Intent Filters - Resolving Intent Filter Collision - Linking the Activities Using Intent - Obtaining Results from Intent – Passing Data Using an Intent Object- Fragments - Hiding Title Bar and Screen Orientation - Fragment Implementation - Finding Fragments - Adding, Removing and Replacing Fragments - Finding Activity Using Fragment - Using the Intent Object to Invoke Built-in Application..

UNIT - III: UI USING VIEWS AND VIEW - GROUPS

Working with View Groups – Linear Layout – Relative Layout – Scroll Layout – Table Layout – Frame Layout – Tab Layout using the Action Bar – Working with Views – Text – Edit Text – Button – Radio Button – Check Box – Image Button – Toggle Button – Rating Bar – Binding Data with Adapter View Class – List View – Spinner – Gallery – Designing the Auto Text Complete View – Screen Orientation – Anchoring the Views of Current Activity – Handling UI Events – Handling User Interaction with Activities and Views – Specialized Fragments – List Fragment – Dialog Fragment – Preference Fragment – Creating Menus, Option Menus, Context Menu and Sub Menu.

UNIT - IV: HANDLING PICTURES AND MENUS WITH VIEWS AND STROING THE DATA

Working with Image Views – Displaying Images in the Gallery View – Displaying Images in the Grid View – Using the Image Switcher View- Designing Context Menu for Image View- Using the Analog-Clock and Digital Clock Views – Embedding Web Browser in an Activity - Notifying the User Creating the Toast Notification - Creating the Status Bar Notification- Creating the Dialog Notification - Introducing the Data Storage Options - Using Preferences - Using the SQLite Database Creating the Database - Executing the Database Operations.

UNIT - V: EMAILING, TELEPHONY AND SMS IN ANDROID

Building an Application to Send Email - Handling Telephony - Displaying Phone InformationApplication Receiving Phone Calls – Making Outgoing Phone Calls Application - Handling SMS Sending SMS Using SMS Manager - Sending SMS Using Intent - Receiving SMS Using the Broadcast Receiver Object- Role of Default SMS Providers - . Publishing Android Application: Export android application – Google play store registration.

Supplementary Learming: Building Mobile Applications using Xamarin

TEXT BOOKS

1. Pradeep Kothari, "Android Application Development (with kitkat support) Black Book", Kogent Learning Solution Inc., Dreamtech Press India Pvt. Ltd, Wiley Publications.
2. Sayed Y. Hashimi, SatyaKomatineni, Dave MacLean, "Pro Android 2", 2010 Edition, Wiley publications.

REFERENCES

1. Reto Meier ,"Professional Android Application Development",2009 Edition, Willy Publication.
2. ZigurdMednieks, Laird Dornin, G. Blake Meike,and Masumi Nakamura, "Programming Android", OReilly publications.

WEB REFERENCES

www.tutorialspoint.com
www.javatpoint.net
www.mkyong.com
www.java2s.com

COURSE OUTCOMES

After the completion of the syllabus the student will be able to:

- Know about the mobile application development environment
- Develop interface and design
- Use the techniques in Mobile Applications

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