A.VEERIYA VANDAYAR MEMORIAL SRI PUSHPAM COLLEGE (AUTONOMOUS), POONDI, THANJAVUR DIST.

Question Pattern for UG and PG Programmes for students to be admitted during 2014– 2015 and afterwards.

Total Marks : 75

QUESTION PATTERN

SECTION – A
(Question 1 to 10)

10 x 2 = 20 Marks

1. Short Answer Questions.
2. Two Questions from each unit (All are answerable)

SECTION – B
(Question 11 to 15)

5 x 5 = 25 Marks

1. 5 Paragraph type questions with "either / or" type choice.
2. One question from each unit of the Syllabus.
3. Answer all the questions.

SECTION – C
(Question 16 to 20)

3 x 10 = 30 Marks

1. 5 Essay type questions – any three are answerable.
2. One questions from each unit of the Syllabus.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	**14P1CA1**	**C AND C++ PROGRAMMING**	**5**	**4**

Objective

- To Understand programming Techniques in C and C++

Unit I **Hrs 15**

C- Language fundamentals: Program Structure - Identifiers - Data types - Integer - float - double - char - constants - variables - operators and expressions - managing input and output operations.

C control structures: Decision making with IF statement - IF.....ELSE statement - nested IF... .ELSE statement - FOR statement - DO.....WHILE statement - WHILE.....DO statement - GOTO statement - SWITCH statement.

Unit II **Hrs 15**

C Functions: Mathematical functions-String functions-and user-defined functions.
Arrays and structures: Arrays, definitions, declarations, entering values in - manipulating arrays - examining and passing an array. Structure: definitions - assigning structure variable - assigning initial values - using a structures - structure arrays - structures and functions.

Pointers and File Operations: Understanding pointers - pointers and functions - File Operations: Understanding files - declaring a file - opening a file - closing a file - input and output functions - formatted input and output - working with structures adding data to a file - reading a printing a disk file.

Unit III **Hrs 15**

What is Object Oriented Programming? – C++ Console I/O- C++ comments- Classes: Some difference between C and C++ - Introducing Function Overloading - Constructor and Destructor Functions- Constructors take parameters- Introducing Inheritance – Object Pointers – Inline Functions.

Assigning Objects – Passing Object to Functions – Returning Object from Functions - An Introduction to friend functions- Arrays of objects – Using Pointers to Objects – Using new & delete – More about new & delete – references – Passing references to objects - Returning references- Independent References and restrictions.

Unit IV **Hrs 15**

Overloading Constructor Functions- Creating and Using a Copy constructor- Using default arguments- Overloading and ambiguity – Finding the address of an overload function- the basics of operator overloading.

Unit V **Hrs 15**

Base class access control –using protected members- Constructors, destructors and inheritance - multiple inheritance- virtual base classes - Some C++ I/O basics - formatted I/O - using I/O manipulators.

File I/O basics- unformatted, binary I/O- more unformatted I/O functions- random access- checking the I/O status- customized I/O and files- Pointers and derived classes- Introduction to virtual functions- more about virtual functions- applying polymorphism- Exception handling.

Text Books

1. E. Balagurusamy, "Programming in C", Tata McGraw Hill, 4th Edition, 2008.

2. Herbert Schildt, "Teach Your self C++", III edition, Tata McGraw Hill, 2001.

References:

1. R.C. Hutchison & S. B. Just, "Programming using the C language", McGraw Hill, 1988.

2. Robert Lafore, "Object Oriented Programming in Turbo C++", Galgotia 2001

3. E. Balagurusamy "Object Oriented Programming with C++ ", Fourth Edition, TMH New Delhi,2010

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	**14P1CA2**	**Core – DATA STRUCTURES AND ALGORITHMS**	**5**	**4**

Objective

- To understand various Data Structures and algorithms design principles.

Unit I **Hrs 15**

Introduction: Elementary Data structures, data structure Operation, Algorithm: complexity, Time space Tradeoff. Mathematical Notation and functions, Algorithm Notation, control structures, complexity of algorithm, Variables, Data Types, Basic Terminology, sorting strings, Character Data Type, string Operations, Word processing, pattern Matching Algorithms.

Unit II **Hrs 15**

Linear arrays, Representation of Linear Arrays in Memory, Traversing Linear Arrays, inserting and Deleting, sorting: Bubble sort, searching: Linear search, Binary search, Multidimensional Arrays, pointers: pointer Arrays, Record structures, Representation of Records in Memory: parallel Arrays, Matrices, sparse Matrices, Linked Lists, Representation of Linked Lists in Memory, Traversing a Linked List Memory Allocation: Garbage collection, insertion into a Liked List, Deletion form a Liked List, Header Linked List, Two- way Lists.

Unit III **Hrs 15**

Stacks, Array Representation of stacks, Arithmetic Expressions; polish Notation Quick sort, an Application of stacks, Recursion, Tower of Hanoi, Implementation of Recursive procedure by stacks, Queues, Deques, priority Queues, Binary Trees, Representation Binary Tress in Memory, Traversing Binary Trees, Traversing Algorithms Using stacks, Header Notes; Threads, Binary search Trees searching and inserting in Binary search Tree, Heap sort, path Length; Huffman's Algorithm, General trees.

Unit IV **Hrs 15**

Graph Theory Terminology, sequential Representation of Graphs; Adjacency Matrix; path matrix, warshall's Algorithm: shortest paths, Linked Representation of a Graph, operation on Graph, posets; Topological sorting. Sorting - Insertion sort, selection sort, Merging, Merge-sort, Radix sort, searching and data Modification, Hashing.

Unit V **Hrs 15**

Branch and bound: Least cost (LC) Search, Bounding- LC branch and bound - FIFO branch and bound - Traveling sales person problem.

References:

1. Seymour Lipschutz "Theory and problem of data structure", Tata McGraw Hill International Edition, 3rd Reprint, 2003.
2. E. Howrowitz and Sahni, "Fundamentals of Computer Algorithms", Galgotia Publications, 1998.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	**14P1CA3**	**Core – DIGITAL COMPUTER FUNDAMENTALS**	**5**	**4**

Objectives:

To understand the basics of digital electronics.

UNIT-1 **Hrs 15**

NUMBER SYSTEM: Binary, Decimal, Octal, Hexadecimal- conversion from one to another-Character and Codes – ASCII – Excess3 – Gray Code – Error Detecting Codes– Binary Addition – Subtraction – Multiplication – Division – Unsigned Binary Numbers – Sign Magnitude Number – Complements.

UNIT – 2 **Hrs 15**

Basic Logic Gates – Boolean laws and theorems – Sum of Product – K- Map – Simplification Methods – Don't Care Conditions – Product of Sum – Data Processing Circuits – Multiplexers – Demultiplexers – Decoder – Encoder – Half Adder, Full Adder – Half Subtracter , Full Subtracter.

UNIT- 3 **Hrs 15**

FLIP FLOP: RS – Clocked RS – Edge Triggered RS – JK – Master Slave Flip Flop – Registers – Shift Registers – Counters – Asynchronous Counters – Synchronous Counters.

UNIT – 4 **Hrs 15**

D/A, A/D Conversion – DA Converter – DA Accuracy , Resolution – AD Converter – Simultaneous Conversion – Counter Method – Continuous Conversion – A/D Technique – Dual Slope A/D conversion – Slope Conversion – AD Accuracy and Resolution.

UNIT – 5 **Hrs 15**

Processor design – Arithmetic Logic Unit – Design of arithmetic circuits – Design of logic circuits – Status register – Design of accumulator – Computer Design – System Configuration – Computer instructions – Design of Computer register – Design of Control – Computer console.

Text Books

1. Albert Paul Malvino, Donals P.Leach, "Digital Principles and Applications", McGraw Hill, 1996.(Unit1- Chapters 5,6; Unit2 – Chapters 2,3,4; Unit3 – 8,9,10,11 ; Unit4 - Chapter13).
2. Digital Logic and Computer design, M.Moris Mano, Prentice Hall of India, 1986. For Unit V.

Reference Book:

1. Thomas C.Bartee "Digital Computer Fundamentals" McGraw-Hill International Edition, New Delhi 1985.
2. B.Ram "Fundamentals of Microprocessors and Microcomputers" Dhanpat Rai Publication (P) LTD. Fifth Edition.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	**14P1CA4**	**Core –DATABASE MANAGEMENT SYSTEM**	**5**	**4**

Objective

- To know concepts and techniques in DBMS.

Unit I **Hrs 15**

Introduction to Database system:Overview-View of Data-Data Models-History of Database system-E-R Model:Basic Concepts-Constraints-Keys-E-R Diagram-Weak Entity Sets-Extended E-R Features-Design of an E-R Data base Schema-Reduction to ER Schema.

Unit II **Hrs 15**

Relational Model-Structure of Relational Database-Relational Algebra-Extended, Additional Algebra Operations-Modification of Database-Other Relational Languages-Tuple Relational calculus-Domain Relational Calculus –SQL:Background-Basic Structure – Set Operations-Aggregate Functions-Nullvalues-Nested Subqueries-View –Complex queries-Modification of Database-Joined Relations-Other Language: QBE and Datalog.

Unit III **Hrs 15**

Integrity and Security-Advanced SQL:domain integrity-Referential integrity-Assertion-Application Design and Development-Triggers-Encryption and Authentication-Relational Data base design-1NF-2NF-BCNF-3NF-5NF.

Unit IV **Hrs 15**

Storage and file Structures:- Overview of Physical storage media-Magnetic disks-RAID-Tertiary Storage-Storage Access-File Organization-organization of records in files-Data Dictionary Storage-Indexing and Hashing:-Basic concepts-Ordered indices-B+ tree index files-B-tree index files-Multiple key Access-Static Hashing-Dynamic Hashing-Index Definition in SQL.

Unit V **Hrs 15**

Transaction Concept-Transaction states-Implementation of Atomicity and Durability-Concurrent Executions-Serializability-Recoverability-Implementations of Isolation-Testing for Serializability. Concurrency Control:-Lock-Based Protocols-Timestamp-Based Protocols-Validation-Based Protocols-Mulitiple Granularity-Deadlock Handling-Recovery System-Failure Classification-Storage Structure-Recovery and Atomicity-Log- based Recovery-Recovery with Concurrent Transations-Buffer management-Failure with Loss of Non-volatile Storage.

References:

1."Database System concepts", Abraham Silber Schatz,Henk F.Korth, S.Sudarsan, Fifth Edition,2006, Tata McGraw Hill.

General References:

1. Fred Mc Fadden, Jeffery A Hoffer, Mary B.prescott, "Modern Database Management", 5 Edition,Addison Wesley, 2000.
2. Elmasri, Navathe, "Fundamentals of Database System", Third Edition, Addison wesley, 2000.
3. Jefrey D.Ulman, Jenifer widomj, "A First Course in Database System", pearson Education Asia, 2001
4. Bipin c Desai, "An Introduction to Database System", Galgotia publications Pvt Limited, 2001.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	**14P1CA5**	**Core – COMPUTER ARCHITECTURE**	**4**	**3**

Objective

- To know about computer organization and its architecture.

Unit I **Hrs 12**

Basic computer Organization: Instruction Codes - Computer Registers - Computer Instructions- Timing and Control - Intruction Cycle - Control Memory - Address Sequencing.

Unit II **Hrs 12**

CPU: General Register Organization - Stack Organization - Instruction Formats - Addressing Modes - program control.

Unit III **Hrs 12**

Computer Arithmetic: Hardware implementation and Algorithm for Addition, Subtraction, Multiplication, and Division - Booth Multiplication Algorithm - Floating point Arithmetic.

Unit IV **Hrs 12**

I/O and Memory Organization: I/O Interface- Asynchronous Data Transfer - Modes of I/O Transfer - priority Interrupt - Direct Memory Access - Memory Hierarchy - Main Memory - Auxiliary Memory - Associative Memory - Cache Memory - Virtual Memory.

Unit V **Hrs 12**

Advanced processing: RISC, CISC Characteristics - parallel processing - pipe Lining- Vector processing - Array processors - Multi processors - Interconnections structures.

Reference:

1. M.Morris Mano, "Computer System Architecture" Third edition, Reprint 2003, Pearson Education.

Unit I Chapters: 5.1to 5.5, 7.1to 7.2

Unit II Chapters: 10.1to 10.5

Unit III Chapters: 8.1to 8.5, 8.7

Unit IV Chapters: 11.2 to 11.6, 12.1to 12.6

Unit V Chapters: 8.8, 9.1, 9.2, 9.7, 13.1, and 13.2

General References:

1.Computer Architecture and organization, J.P.Hayes, Tata McGraw Hill, 1993.

2.Computer Organization, Hamachar V.C.Vranesic.Z.G.zaky. S.G.Tata McGraw Hill, 1978.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	**14P1CAP1**	**Core – C AND C++ Lab**	**3**	**2**

Objective

- To Understand and apply datastructures concepts in C and c++ programming.

C PROGRAMMING LAB

1. Write a C program to find the roots of Quadratic Equation and hence determine the roots.
2. Write a C program to find the sum of series using a) Sine b) Cosine c) Exponential Series.
3. Write a program in C to read the marks of a student in a particular subject and sort them in ascending order. Also display the lowest and highest marks obtained in the subject.
4. Write a C program to perform Addition, Subtraction and Multiplication for two matrices using Functions depending on user's choice..
5. Write a C program to find a) Mean b) Standard Deviation and c) Variance for a set of n numbers.
6. Write a C program to find the a) Factorial value b) Fibonacci series using Recursion.
7. Write a C program to perform String Manipulations using Pointers.
   i. Finding the length of the String
   ii. Joining two strings
   iii. String Comparison
   iv. Palindrome Checking
   v. Counting the number of uppercase letter, Lowercase letter, digits, vowels, special characters, words and lines.
8. Prepare Payroll using sequential files in C. Use appropriate headings to print them in a neat format.
9. Write a C program to implement a Stack as a circular Linked list.
10. Write a C program to implement a Queue.
11. Write a C program to create a sorted Linked list and count the number of nodes in it.
12. Write a C program to implement a Doubly Linked list.
13. Write a C program for finding a number and determine its position if found, using Binary search.
14. Write a C program for creating a list of numbers using Arrays. Also perform insertion and deletion operation and arrange the numbers using Bubble sort.
15. Write a C program to create a Binary tree and eliminate the duplicate.

C++ PROGRAMMING WITH DATA STRUCTURE LAB

1. Create a simple program using class and object
2. Write a C++ program to illustrate the use of the following concepts
   i) Default arguments and ii) Reference variable
3. Develop an object oriented to add two times. Assume that the time consists of the members hours, minutes and seconds. Use objects as arguments

4. Develop a C++ program to create two classes "class1' with data member number I and "class 2" with data member number 2. Develop inline functions to get values for data members and use friend function to add number 1 and number2.
5. Write a C++ program to define a class employee with data members with relevant details and calculate DA, MA, HRA net pay (DA = 71% of basic py, MA= 10, HRA = 0.5% of basic pay). Create arrays of objects for 10 employees.
6. Write a overload function to multiply two matrices and for multiplying all the elements of the matrix by a constant
7. Write a C++ program to read the following information from the keyboard.
   i) Reg. No.
   ii) Name of the Student
   iii) Mark 1
   iv) Mark 2
   v) Mark 3

   Use default, parameterized and copy constructor to initialize the objects and display the same.
8. Write a program in C++ using pointer for the following
   a) To copy the contents of one string to another string
   b) To concatenate the given two strings into a one string
9. Design a base class 'person' with data members empcode, name. Derive two classes "account" with data members pay and "admin" class with data member experience. The class "master" derives information from both "account" and "admin". Write a C++ program to create and display the information contained in "master" object using virtual functions
10. Write a C++ program using all types of inheritance
11. Write C++ program using own Manipulators (example setw, setfill etc.)
12. Write a program in C++ to read a file and to
    a) Display the contents of the file into the screen
    b) Display the number of characters and
    c) The number of line in the files
13. Write C++ program using command line arguments.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	**14P1CAP2**	**Core – RDBMS Lab**	**3**	**2**

Objective

- To apply RDBMS features through Oracle.

1. Library information processing.
2. Students mark sheet processing.
3. Telephone directory maintenance.
4. Gas booking and delivering system.
5. Electricity bill processing.
6. Bank transaction (SB)
7. Pay roll processing.
8. Inventory.
9. Question database and conducting quiz.
10. Purchase order processing.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	**14P1CAS1**	**GROOMING & BUSINESS ETIQUETTE**	**3**	**2**

Objective

- **To acquire various expression skills**

Communication skills (Oral)

- Understanding the basics of effective communication.
- Understanding the barriers to communication.
- Overcoming those barriers that affect communication.
- Developing effective communication process.

Communication skills (written)

- written communication.
  - Report writing.
  - Email etiquette.

Listening skills

- Understanding the basics of effective Listening.
- Understanding the barriers to Listening.
- Overcoming the barriers to Listening .
- Developing effective Listening skill.

Presentation skills

- planning a presentation.
- Steps in presentation process.
- Handling audience.
- Understanding body language and delivery strategies.
- Over coming stage fear.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	**14P2CA6**	**Core – COMPUTER NETWORKS**	**5**	**4**

Objective

- To know about various layers of computer network architecture.

Unit I **Hrs 15**

Introduction To Networks And Communication Media: Uses - Network Hardware - Network software - Reference Models - Example Network - Network standardization. Basis for data communication - Transmission media - Wireless Transmission- Telephone system - Satellite Communication.

Unit II **Hrs 15**

The Data Link Layer: Data Link Layer design issues - Error Detection and Correction Methods - Elementary Data Link protocols - sliding Window protocols - Verification Methods Channel Allocation- Multiple Access protocols- IEEE 802 Standards.

Unit III **Hrs 15**

The Network Layer: Network Layer design issues - Routing algorithms- Congestion Control algorithms - Internetworking - Network Layer in Internet.

Unit IV **Hrs 15**

The Transport protocols: Transport Service - Transport protocols - Internet Transport protocols UDP-TCP-performance issues.

Unit V **Hrs 15**

The Application Layer : Application Layer design issues- Domain Names System - Electronic Mail - word wide web - Multimedia - other Application- Network Security- Basic Cryptography-DES-RSA.

References:

1. Andrews S.Tanenbaum, "Computer Networks", prentice Hall of India private Limited, (4Edition), 2003.

General References

1. Leon Garcia and Widjaja, "Communication Networks - Fundamental Concepts and key architecture", Tata McGraw Hill, 2001.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
II	**14P2CA7**	**Core – OPERATING SYSTEM DESIGN PRINCIPLES**	**5**	**3**

Objective

- To understand the design concepts of Operating system.

Unit I **Hrs 15**

Introduction: Multiprogramming - Time sharing - Distributed System - real time System -I/O structure - Dual mode operation- Hardware protection- General system architecture- Operating System Services- system calls -System program- System Design and implementation.

Unit II **Hrs 15**

Process management: process concept- Concurrent process- Scheduling concepts- CPU Scheduling - scheduling algorithms. Multi processor Scheduling.

Unit III **Hrs 15**

Process synchronization: Critical Section - synchronization hardware - Semaphores, Classical problem of synchronization Inter process Communication- Deadlock- Characterization, prevention, Avoidance, Detection.

Unit IV **Hrs 15**

Storage management: Swapping, Single and Multiple partition allocation -paging Segmentation, Virtual memory - Demand paging - page replacement algorithms- Thrashing - Secondary Storage management - Disk structure Free space management- Allocation methods- Disk Scheduling - performance and reliability improvements- Storage hierarchy.

Unit V **Hrs 15**

Files and protection: File System organization- File operations - Access methods- Consistency semantics- Directory structure organization- File protection - Implementation issues- Security- Encryption - Case study -UNIX and windows NT- Introduction to distributed OS design.

References:

1. Silberschatz and Galvin, Operating System Concepts, 5 Edition, Addison wisely publishing Co. 2002.

General References:

1. Deiltal, An Introduction to Operation System, Addison Wesley publishing Co., 1985.

2. Milankonvic. M.Operating System Concepts and Design, 2 Edition, Mc Grew Hill, 1992.

3. Madnick SE and Donovan JJ,Operating System, Mc Graw Hill, 1974.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	**14P2CA8**	**Core – COMPUTER GRAPHICS**	**5**	**4**

Objective

- To understand the various techniques in computer graphics.

Unit I ***Hrs 15***

Introduction to computer graphics and applications: Display devices – Raster scan and random scan systems – Input Devices – Hard Copy Device - Graphics Software and functions, Software standards, PHIGS workstation.

Unit II ***Hrs 15***

Output Primitives: Line-drawing, circle generating, ellipse-generating algorithms – Filled-Area primitives– Fill area functions, Cell array - character generation.

Unit III ***Hrs 15***

Attributes of output primitives: Line, curve, color and gray scale level, area-fill, character, text, marker and Bundled attributes – Inquiry function – Antialiasing techniques.

Unit IV ***Hrs 15***

Geometric Transformations and Viewing : Basic transformations – Homogeneous coordinates – Composite transformations – Reflection and shear – Window-to-View Port transformation – Viewing functions – Point, line, Polygon, curve, text, exterior clipping operations.

Unit V ***Hrs 15***

GUI and Input Methods : The User Dialogue – Graphical input devices – Input functions – Interactive Picture – Construction Techniques – Virtual Reality Environments.

Reference:

1. Donald Hearn and M. pauline Baker, "Computer Graphics, C version", Second Indian Reprint 2003, Pearson Education.

Unit I Chapters:1,2
Unit II Chapters: 3
Unit III Chapters: 4
Unit IV Chapters:5,6
Unit V Chapters: 8

General References:

1. "Computer Graphics"- Roy A.plastock Gordon kalley, Outline Series in Computer, International Editions.
2. "Principles of Interactive Computer Graphics" william Newman, Robert F.Sproull, (Second Edition McGraw Hill) International Editions, 2003.
3. "Computer Graphics" Second Edition By Dobald Hearn,M.pauline Baker, presentice Hall, 2008.
4. "Multimedia making it Word" Sixth Edition By Tay Vaughan Tata Mc Graw Hill pulishing Computer Ltd, New Delhi, 2004.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	**14P2CA9**	**Core –JAVA PROGRAMMING**	**4**	**4**

Objective

- To understand programming features in Java

UNIT- I **Hrs 12**

An overview of Java, Data types, Variables, and Arrays:- simple types, integers, Floating point types Char, Boolean, variables, Type conversion, Arrays, Automatic Type promotion rules, Operators- Control statements.

Chapter: - 1, 2,3,4,5 Java: - The complete Reference, Fifth edition, Herbert Schildt,TMH.

UNIT- II **Hrs 12**

Introducing Classes, A Closer look at Methods and Classes- Inheritance, Packages and Interfaces- Exception handling.

Chapter:-6,7,8,9,10 Java 2:-The complete Reference, Fifth edition, Herbert Schildt, TMH.

UNIT- III **Hrs 12**

Multithreaded Programming - I/O Applets - String handling - Input& Output: Exploring Java. io -Applet Class - Event handling

Chapter: - 11, 12, 13,17,19,20 Java2:- The complete Reference, Fifth edition, Herbert Schildt, TME.

UNIT- IV **Hrs 12**

Servlet: - Lifecycle of Servlet, Java Servlet API, Javax.Servlet Package, Javax.Servelet. HTTP Package, Reading Servlet Parameters, Handling HTTP Requests Responses, Using cookies, Session Tracking.

Chapter :- 27 Java 2:- The complete Reference, Fifth edition, Herbert Schildt, TMH.

UNIT- V **Hrs 12**

JSP overview, JSP Syntax & Semantics, Expression, Scriptlets and Declarations, Request Dispatching, Session and Thread management: - Session API, Session Tracking and Servlet Threading Models: - Application

Chapter: - 4, 5, 6, 7, 8 JSP 2.0Complete Reference, PWL Hanna, TMH.

Text book:

Java Complete Reference - Herbert Schildt

Reference book:

1. PATRICK NAUGHTON, "The JAVA Hant Book" , Tata MC_Graw Hill Publishers Company Pvt. Ltd, 1996.
2. KENNY CHU – "The Complete Reference Java", Tata McGraw Hill Publishers company Pvt. Ltd, 1997.
3. Herbert schildt, "The Complete Reference Java 2" , Tata McGraw Hill Publishers company Pvt. Ltd, Fifth Edition. 2008.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
II	**14P2CA10**	**Core –MICROPROCESSORS AND THEIR APPLICATIONS**	**5**	**4**

Objective

- To understand concepts and applications of Microprocessors.

Unit-I **Hrs 15**

Microprocessors and Assembly Language:Microprocessors-Microprocessor introduction set and computer languages-From large computer to single chip microcomputer-Application: Microprocesor controlled Temperature system.

Introduction to 8085 Assembly language programming:The 8085 Programming Model-Intsruction classification-Instruction data format and storage-How to write Assemble and Execute a simple program-Overview of the 8085 Instruction set-Writing and hand Assembling a program.

Unit - II **Hrs 15**

Microprocessor Architecture and Microcomputer systems:Microprocessor Architecture and Its Operations-Memory-Input and Output(I/O) Devices-Example of a Microcomputer system.

8085 Microprocessor Architecture and memory Interfacing:The 8085 MPU-Example of an 8085 based microcomputer –Memory interfacing-Interfacing the 8155 Memory Segment.

Unit-III **Hrs 15**

General purpose Programmable Peripheral Devices:The 8255 A Programmable Peripheral Interface-The 8259 A Programmable Interrupt Controller-8237 DMA Controller and Direct Memory Access-8251 Communication Programmable Interface.

Unit-IV **Hrs 15**

The 8086-Family Architecture-Organization of 8086-CPU-Addresses memory location-Physical and Logical-Memory Grouping 8086-Registers into a BIU and EU-Addressing-Mode.

Unit-V **Hrs 15**

Introduction to Embedded Systems-Application Areas-Catogories of Embedded Systems-Overview of Embedded Systems Architecture-Specialities of ES-Recent Trends in Embedded Systems. Hardware Architecture-Software Architecture.

Text books:

1.”Micprocessors Architecture Programming and Application with the 8085” Ramesh Gaonkar , 5Th Edition,penram International Publishing Pvt Ltd-2007.

Unit-I : Chapter 1,1.1,1.2,1.3,1.4,2,2.1,2.2,2.3,2.4,2.5,2.6.

Unit-II : Chapter 3,3.1,3.2,3.3,3.4,4,4.1,4.2,4.3,4.4.

Unit-III : Chapter 15,15.1,15.2,15.5,15.6,15.6

Unit-IV : 2.”The 8086 Microprocessor programming and Interfacing the PC” Kenneth J-Ayala Delmar Publisher : Chapter 3,3.6,3.7,3.8,3.9,4.3

Unit-V : 3.”Embedded Real time Systems:Concept Design and Programming” Black Book by Dr.K.V.K.K.Prasad dreamteh-press : Chapter 1.1 to 1.6 ,2.1,2.2.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
II	**14P2CAP3**	**CORE – JAVA PROGRAMMING LAB**	**3**	**2**

Objective

- To apply advances in Java.

Application:

1. Determine the order of numbers generated randomly using random class.
2. Implementation of point class for image manipulation.
3. Usage of calendar class and manipulation.
4. String manipulation using char Array.
5. Database creation for storing e-mail addresses and manipulation.
6. Usage of Vector classes.
7. Implementing thread based applications and exception handling (synchronization and a synchronization).

Applets:

1. Working with frames and various controls.
2. Working with dialog and menus.
3. Working with panel and layout.
4. Incorporating graphics (scaling only).

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	**14P2CAP4**	**Core – MULTIMEDIA AND OPERATING SYSTEM LAB**	**3**	**2**

Objective

- Learn to use Multimedia technologies
- To apply O.S concepts using UNIX Programming.

Multimedia technologies

1. Study about timeline concepts. Insert text, image, use scaling rotation alignment, Add effects (predefined and user defined)
2. Study masking concepts. Use audio in the movie.
3. Add buttons, menus, and actions to the movie.
4. Export movie, Use multiple scenes.
5. Insert text, image, and sprite to the movie.

UNIX Programming

6. Write a shell program to create a menu for copy, edit, rename and delete a file.
7. Write a shell program for merging a file.
8. Write a shell program for file checking and formatting and difference between two files.
9. Write a shell program for sorting the file depends upon the primary key.
10. Write a UNIX program to find whether the given number is palindrome number or not.
11. Write a shell program to generate a Fibonacci series.
12. Write a UNIX program to find out the sum of digits.
13. Write a shell program to generate the use of pipeline and tree command.
14. Write a shell program to demonstrate the use of grep command.
15. Write a program to find the given number is prime or not.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
II	**14P2CAS2**	**Presentation Skills**	**3**	**2**

Objective

- To acquire skills for facing interviews

Resume writing Skills

- Self - analysis
- Facts about resume
- Types of resume
- Creating a winning resume and preparing an effective covering letter.

Facing Interviews

- Understanding the basics of an interview and types of interview.
- Company's expectation in candidate.
- Preparing for an interview and the stages of an interview.
- Concept of body language in an interview.
- Grooming for an interview
- Do's and don'ts of facing an interview
- Handling questions.

Participating in the Group Discussion

- Understanding the Basics of a group discussion.
- Types of group discussion and Group discussion topics.
- The stages of a group discussion
- Company's Expectation in a Candidate
- Do's and dont's of a group discussion

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III	**14P3CA11**	**Core –INTERNET AND WEB TECHNOLOGY**	**5**	**4**

Objective

- To Understand HTML, Java script, VB script, ASP, PHP and MYSQL concepts.

Unit I **Hrs 15**

HTML: Introduction-SGML-Outline of an HTML Document-Head Section-Body section-HTML Forms. DHTML: Introduction-CSS-DHTML Document Objects Model and collections-Event Handling-Filters and Transitions – Data Binding.

Unit II **Hrs 15**

JAVASCRIPT: Introduction-Language Elements objects of Java script-Other objects. VBSCRIPT: Introduction-Embedding VBScript code in an HTML Document-Comments-Variables-Operators-Procedures-Conditional Statements-Looping Constructs-object and VBScript-Cookies.

Unit-III **Hrs 15**

ASP: Introduction-Advantages of using Asp-First ASP Script-Processing of Asp Scripts with Forms-Variables and Constructs-Subroutines-Include/Virtual-ASP Cookies-Asp Objects-Connecting to Data with ASP.

Unit-IV **Hrs 20**

SERVLETS: Introduction-Advantages of Servlets over CGI-Installing Servlets-The Servlet Life cycle-Servlet API-A Simple Servlet-Handling HTTP GET Requests-Handling HTTP POST Requests-Cookies-Session Tracking-Multi tier Applications using Database Connecting-Servlet chaining.

JSP: Introduction-Advantages of JSP-Developing First JSP-Component of JSP-Reading Request Information-Retrieving the Data Posted from a HTML File to a JSP File-JSP Sessions-Cookies-Disaabling sessions.

UNIT V **Hrs 25**

Exploring PHP- PHP Decision Making- Functions-Arrays-Database Basics- Using MySQL-Getting PHP to talk and MySQL.

Working with Forms-Practical PHP-Modifying MySQL-Objects and PHP Data-Cookies-Sessions.

Text Books:

1. N.P Gopalan,J.Akilandeswari, "Web Technology" A Developer's Perspective, Prentice Hall of India Private Limited, New Delhi, 2008.
2. K. Meena , R. Sivakumar , A.B. Karthick Anand Babu "Web programming using PHP and MySQL" - Himalaya Publishing House – 2011.

Reference books:

1. Chuekmvsiano and Bill Kennedy,'HTML the Definite Guide', O'Reily Publications 2002.
2. Joseph Schmulter, 'Dynamic HTML', Bpb Publications 2000.
3. Scott Mitchell and James Alknson, 'Active Server Pages 3.0 in 21 Days', SAMS Techmedia.
4. Jason Huntel with William Crawford, 'JAVA Servlet Programming', O'Reily Publications.
5. Steven Holzner, "The Complete Reference PHP", Tata McGraw Hill, Edition 2008.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
III	**14P3CA12**	**Core – ACCOUNTING AND FINANCIAL MANAGEMENT**	**5**	**4**

Objective

- To understand the principles of how to manage Accounts and Finance.

UNIT I **Hrs 15**

Financial Accounting: Meaning –concept and conventions-Double Entry system-Journal ledger-Trial balance-Final accounts with simple adjustments. Trading account – profit and loss account-Balance sheets.

UNIT-II **Hrs 15**

Cost Accounting: Meaning –Objectives-Cost and its classification-Preparation of cost Sheet-Marginal costing –Assumptions –Advantages-Limitations-Applications and marginal costing Technique

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UNIT-III **Hrs 15**

Accounting Ratio: Meaning-advantages—Limitations calculations of simple ratios preparation of funds flow and cash flow statement.

UNIT-IV **Hrs 15**

Budget and Budgeting Control: Meaning objectives-Preparation of various budgets, sales-Purchase raw materials-Production cash-Flexible budget-Zero Base Budgeting.

UNIT-V **Hrs 15**

Financial Management-Meaning –objectives-scope-Functions of financial Management capital budgeting methods-Capital structure forms-Factors data mining capital structure.

Note 60% Problem
40% Theory

References

1. T.S Grewal,"Double Entry Book Keeping", Sultan chand and Sons.
2. Vinayagam and mami "Principles of Accountancy "Sultan Chand and Sons.
3. R.L Gupta and V.K Gupta,"Introduction to financial accounting "Sultan Chand.
4. S.P Jain and K.L Narang,"Cost Accounting"Kalyani Publishers.
5. S.P.Lyenger-Cost Accounting –Sultan Chand and Sons.
6. S.N.Maheswari-Prinicpal of Management Accounting-Sultan Chand and Sons
7. Sharma, Sasi and Guptha-Management Accounting-Kalayani publishers.
8. R.S.Pillai and Bhagavathi- Management Accounting-Sultan Chand and Sons
9. Sharma, Sasi and Guptha-Financial Management-Kalyanip publishers

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III	**14P3CA13**	**Core – MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE**	**5**	**4**

Objective

- To know about Mathematical techniques required for computer science.

Unit I **Hrs 15**

Mathematical logic-statements and notation- connectives- normal forms - the theory of inference for the statements calculus- the predicate calculus- inference theory and predicate calculus.

Unit II **Hrs 15**

Set theory: Basic concept of set theory, notation, inclusion and equality of sets; the power set, some operations of sets, Venn diagrams, some basic set identities, the principles of specification, ordered pairs and N-tuples, Cartesian products-representation of discrete structure-data structures, storage structures, sequential allocation, pointers and linked allocation, an application of bit represented sets relations and ordering-relations, properties of binary relations, in a set, relation, matrix and the graph of a relation, partition and covering of a set, equivalence relations, compatibility relations, composition of binary relations, partial ordering, partially ordered set: representation and associated terminology.

Unit III **Hrs 15**

Functions: Definition and introduction, composition of function, inverse functions, binary and N -array operations, characteristic function of a set, hashing function-natural numbers-peano's axioms and mathematical induction. Matrices Matrix operations-rules of matrix arithmetic- Eigen vector- diagonalization.

Unit IV **Hrs 15**

Algebraic structures: Algebraic systems- examples and general properties, definition and examples, some simple algebraic systems and general properties-semi groups and monoids-definition and examples, homomorphism of semi groups and monoids, sub-groups and submonoids-grammer and languages-discussion of grammars, formal definition of language, notations for syntax analysis.

Groups: Definition and examples, subgroups and homomorphism, cosets and Lagrange's theorem, normal subgroups, algebraic systems with two binary operations.

Unit V **Hrs 15**

Graph theory: basic- concepts of graph theory, basic definitions, paths, rechability, and connectedness, matrix representation of graphs, trees- storage representation and manipulation of graphs - Vector spaces: Euclidean - n-space - general Vector spaces -subspaces-linear independence's- basis and dimensions.

References:

1. Discrete mathematical structure application to computer science, J.B.Tremblay and R.Manohar, Mc Graw- hill international edition 1987.
   Chapters: 1.1to1.6, 2.1to 2.5., 3.1to3.3, 3.5to5.1 ,5.2.
2. Modern algebra– R.Balakrishnan and N.Ramabhadran. Chapters: 2 (Pages 40 – 54) and Chapter 3 (pages 82 – 100).

General References:

1. Applied Discrete structures for computer science, D.Alan, L.Lenneth, Galgotia publication, New Delhi, 1983.
2. Formal languages and their relations to automata,J.E.Hopcroft and A.D. Ullman, Addison - weslay publishing company, 1969.
3. Elements of discrete mathematics, C.L.Ltd, Mc Graw Hill.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III	**14P3CA14**	**Core – OBJECT ORIENTED SYSTEM DEVELOPMENT**	**4**	**4**

Objective

- To understand the object oriented analysis and design

UNIT- I **Hrs 12**

An Overview of Object Oriented Systems Development - Object Basics - Object Oriented Systems Development Life Cycle.

UNIT- II **Hrs 12**

Rumbaugh Methodology - Booch Methodology - Jacobson Methodology - Patterns-Frameworks - Unified Approach - Unified Modeling Language - Use case - class diagram - Interactive Diagram - Package Diagram - Collaboration Diagram - State Diagram - Activity Diagram.

UNIT- III **Hrs 12**

Identifying use cases - Object Analysis - Classification – Identifying Object relationships - Attributes and Methods.

UNIT- IV **Hrs 12**

Design axioms - Designing Classes - Access Layer - Object Storage - Object Interoperability.

UNIT- V **Hrs 12**

Designing Interface Objects - Software Quality Assurance – System Usability - Measuring User Satisfaction

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BOOKS FOR STUDY:

1. Ali Bahrami, "Object Oriented Systems Development", Tata McGraw-Hill, 1999

REFERENCES:

1. Stephen R. Schach, "Introduction to Object Oriented Analysis and Design", Tata McGraw-Hill, 2003.
2. James Rumbaugh, Ivar Jacobson, Grady Booch "The Unified Modeling Language Reference Manual", Addison Wesley, 1999.
3. Hans-Erik Eriksson, Magnus Penker, Brain Lyons, David Fado, "UML Toolkit", OMG Press Wiley Publishing Inc., 2004.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III	**14P3CA15**	**Core –SOFTWARE ENGINEERING**	**5**	**4**

Objective

- To understand advances in developing software.

Unit I **Hrs 15**

A Generic view of Process: Layered Technology-Process Framework-Capability Maturity Model Integration-Process Patterns-Process Assessment-Personal and Team Process Models-Process Technology-Product and Process. **Process Models:** Waterfall Models-Incremental Process Model-Evolutionary Process Model-Specialized Process Model-Unified Process.

Unit II **Hrs 15**

Requirement Engineering: Tasks-Initiating Requirement Engineering Process-Eliciting Requirements-Developing Use case-Building Analysis Model-Negotiating Requirements-Validating Requirements. **Building Analysis Model:** Requirement Analysis –Analysis Modeling Approaches-Data Modeling Concepts-Object Oriented Analysis-Scenario Based Modeling-Flow Oriented- Class Based –Behavioral Model.

Unit III **Hrs 15**

Design Engineering: Context of Software Engineering –Design Process and Design Quality-Design Concepts-Design model-Pattern Based Design. **Architectural Design:** Software Architecture-Data Design-Architectural Styles and Pattern-Architectural Design-Alternate Architectural Design-Mapping Data Flow. **User Interface Design:** Golden Rules-User Interface Analysis and Design-Interface Analysis-Interface Design- Design Evaluation.

Unit IV **Hrs 15**

Testing Strategies: Strategic Approach-Strategic Issues-Strategic for Conventional Software-Strategic for Object Oriented Software-Validation Testing-System Testing-Art of Debugging. **Testing Tactics:** Testing fundamentals-Black box Testing-White Box Testing-Basis Path Testing-Control Structure Testing-Object Oriented Testing-Testing Methods Applicable-Interclass Test Case Design-Testing for Specialized Environments-Testing Patterns.

Unit V **Hrs 15**

Project Management: Management Spectrum – People –Product-Process-Project-W5HH Principle-Critical Practices. **Quality Management**: Quality Concepts-Software quality Assurance-Software Reviews-Technical Reviews –Statistical SQA-Software Reliability-ISO 9000 Quality Standards-SQA Plan. **Change Management:** Software Configuration management-SCM Repository-SCM Process-Configuration Management for Web Engineering.

Reference:

1. Software Engineering (Sixth Edition) by ROGER S. PRESSMAN, McGraw-Hill International Edition.
2. Richard E.Fairley, "Software Engineering Concepts", McGraw-Hill Book Company - 1985.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III	**14P3CAP5**	**OBJECT ORIENTED ANALYSIS AND DESIGN LAB**	**3**	**3**

OBJECTIVES

- Introduction to UML notations and diagrams.
- Hands on exposure of "Visual Paradigm software for UML" involving analysis and design with UML diagrams.

1. use case, class diagrams in online ticket reservation systems
2. use case, class diagrams in hotel reservation systems
3. use case, class diagrams in student information system
4. use case, class diagrams in sales & marketing system
5. use case, class diagrams in banking system and inventory tracking system.
6. Behavioural diagrams for application systems
7. state chart diagram for application systems
8. component diagrams for systems
9. deployment diagrams for systems – Test cases,
10. integration test cases for systems

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III	**14P3CAP6**	**Core – WEB TECHNOLOGY LAB**	**3**	**3**

Objective

- To apply Web technology concepts.

1. Create a Generic Servlet Class and print "Hello" to the browser using service () method.
2. Create an Http Servlet Class and print "Hi world" to the browser using do Get () method.
3. Create an Http Servlet Class and print "Hello world" to the browser using do Get () method.
4. Create an Http Servlet Class and create a session inside the do Get () method.
5. Create Generic Servlet Class and create a session inside the service () method.
6. Create a JSP files and print "Hello welcome" in BOLD text.
7. Create two JSP files called a.jsp and b.jsp then forward b. jsp file from a.jsp.
8. Create two JSP files called a.jsp and b.jsp then include b.jsp file at a.jsp using Directives (@ include).
9. Create two JSP files called a.jsp and b.jsp then include b.jsp at a.jsp using action include (jsp: include).
10. What is server side forward and what is client side forward? How do you achieve these in your JSP? Write a Demo program.
11. Create a Servlet file Call JSP file from that created Servlet.
12. Create a HTML from with first name and last name as control elements and get those parameters your JSP file and print your JSP.
13. Can you print the current date using DATE class at your JSP? write a Demo program.
14. How do you add the string object like (string strVar= "hi") to session and get the object from session and print it your JSP?
15. How do you get an object in your JSP that object has been added in your previous JSP?

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III	**14P3CAS3**	**GROUP COMMUNICATION**	**3**	**2**

Objective

- To acquire Dynamic Skills for developing Personality.

Goal Setting

- Benefits of goal setting
- Steps involved in setting goals.
- Setting goals on six areas of life and Living with goals.

Time Management

- Understanding the time wasters.
- Planning and scheduling using four quadrants.
- Developing daily schedules.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
IV	**14P4CA16**	**Core – OPTIMIZATION TECHNIQUES**	**5**	**5**

Objective

- To understand different techniques to optimize for decision making.

Unit I **Hrs 15**

Linear programming: Introduction-History of OR - Formulation of LP Model - Graphical Solution - Algebraic Solutions - Simplex Method - Feasibility - Optimality - Artificial Variables -M – Technique.

Unit II **Hrs 15**

Queuing Modules: Introduction - Deterministic Model- Queue parameters- M/M/I Queue - Limited queue Capacity - Multiple servers- Finite Sources- Waiting Times - Queue Disciplines.

Unit III **Hrs 15**

Inventory Models: Deterministic Models - EOQ- Finite and Infinite Deliver Rates with- out Back ordering- Finite and Infinite Deliver Rates with back ordering- Quantity Discounts-EOQ with Constraints - Probabilistic Model- Single Period Model.

Unit IV **Hrs 15**

PERT/ CPM: Arrow(Network) Diagram representation - Time estimates- Critical path - Floats- Constructions of time Chart and Resource Leveling - Probability and Cost Considerations in Project Scheduling- Project Control - Transportation problem - Assignment problem - Least Time Transpiration problem.

Unit V **Hrs 15**

Replacement Theory: Introduction- Various Replacement Situations - Replacement Policy - Variables Maintenance Costs and Fixed Money Value- Variable Maintenance cost and Variable money Value - Individual Replacement Policy - Group Replacement Policy.

Reference:

1. "Problem in Operation Research" P.K.Gupta and Man Mohan, Fifth Edition.

General References:

1. Hamdy A.Taha, Operations Research-An Introduction, Macmillan publishing Company, 1982.
2. Don T.philps, A.Ravindran, James J. Solberg, "Operations Research", principles and practice John Wiley &Sons, 1976. Unit I: Pages 1-9,13-20,39-50,71-82,97-104,111-125. Unit II: Pages 495 - 512. Unit III: Pages 529 - 565. Unit IV : Pages 647 – 676, 275 - 341. Unit V : Pages 575 - 596.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
IV	**14P4CA17**	**Core –COMPILER DESIGN**	**5**	**5**

Objective

- To know the concepts and techniques for designing complier.

Unit I **Hrs 15**

Introduction to compilers: Compilers and Translators, Structure of a Compiler, Compiler Writing tools, programming Languages. High Level programming Languages, Definitions of programming Languages, Lexical and Syntactic structure of a Languages - Finite Automata and Lexical analysis, Role of a lexical analyzer, Regular expressions, Finite Automata Minimizing the number of syntactic specification of programming languages.

Unit II **Hrs 15**

Context free grammars, derivations and parse trees, capabilities of context free grammars-Basic parsing techniques: Shift reproduce parsing-Operator precedence parsing-Top down parsing-predictive parsers-Automatic Construction of efficient parsers.

Unit III **Hrs 15**

LR parser - Constructing SLR - Canonical LR and LALR parsing Tables - Using Ambiguous Grammars -Automatic parser Generator - Implementation of LR parsing Tables. Syntax Directed Translation: Schemes - Implementation - Intermediate Code - postfix Notation - parse Tree and Syntax Trees - Three Address Code- Quadruples and Triples - Translation of Assignment Statements - Boolean Expression - postfix Translations - Translation with a Top - Down parser.

Unit IV **Hrs 15**

Symbol Tables, Contents data Structures, representing scope information. Runtime Storage Administration, Implementation and Storage allocation and of simple stack allocation schemes and block structured languages, Error detection and recovery, Lexical phase Error, Syntactic phase error, Semantic errors.

Unit V **Hrs 15**

Introduction to Code Optimization, principle Sources of Optimization, Loop Optimization, DAG Representation of basic blocks, Global data flow Analysis, Code generation, problems in Code Generation Register allocation and Assignment, Code Generation from DAG' s, peephole Optimization.

Reference:

1. Alfred V. Aho and Jeffrey D. Ullman, "principles of Compiler Design", Addison Wesley, Narosa ISE, 1991Reprint.

General References:

1. William A.Barret, Rodney M. Bates, David A.Gustafon and D.Couch - "Complier Construction Theory and practice", Galgotia publishing Co,1990.

2.Jeaan - paul Tembly and paul G. Sorenson, - "The Theory and John D.Couch - "The Theory and practice of Complier writing", Mc Graw Hill 1985.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
IV	**14P4CA18**	**Core – ORGANIZATIONAL BEHAVIOUR**	**5**	**4**

Objective:

- This Course aims at providing in depth Knowledge in Organizational Behavior to enhance the problem formulation in solving skills with a focus on Human Relations aspects.

UNIT 1 **Hrs 15**

Nature of Organizational Behaviour: Concept of Organization –concept of organization behaviour-challenges and opportunities for organizational behaviour – Applying OB knowledge to management practices. **Foundations of organizational Behaviour:** Classical Approach **–** Neoclassical approach-modern approach-Organizational behaviour models.

UNIT II **Hrs 15**

Nature of Human Behaviour: Concept of behaviour – Process of behaviour – Individual differences-Models of Man. **Personality:** Concept of Personality - Personality measurement. **Perception:** Concept of Perception-Interpersonal perception –Developing Perceptional Skills.

UNIT III **Hrs 15**

Learning: Concept of Learning – Learning theories – Reinforcement-organizational behaviour modification-Learning organization-Knowledge management. **Interpersonal Behaviour:** Nature of Inter personal behaviour –Transactional Analysis. **Group Dynamics:** Concept of group dynamics-Formal groups-Informal group or organization – Group behaviour-Group decision making – Intergroup behaviour.

UNIT IV **Hrs 15**

Power and Politics: Concept of Power -Politics. **Leadership:** Concept of Leadership – Leadership theories-Leadership styles – Leadership styles in Indian organizations- Contemporary issues in Leadership.

UNIT V **Hrs 15**

Communication: Concept of Communication – Communication symbols-Communication network- Barriers in communication- Making communication effective-Communication pattern in Indian organization. **Conflict Management:** Concept of conflict**-** Individual level conflict –Group level conflict- Organizational level conflict-Managing conflict- Negotiation.

Text Book:

1. L.M.Prasad "Organizational Behaviour" Sultan Chand & Sons Educational Publishers, New Delhi, Fifth Edition 2011.

References:

1. Fred Luthans "Organizational Behaviour" McGraw Hill Publishers.
2. Huge J. Arnold, Daniel C.Feldman "Organizational Behaviour" McGraw Hill Publishers.
3. Stephen P.Robbins , Nancy Langton "Organizational Behaviour " Pearson Education series.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
IV	**14P4CAEL1A**	**Elective -1A DISTRIBUTED TECHNOLOGIES**	**5**	**4**

Objective:

To impart knowledge about the distributed environment, its architecture and application development using J2EE and Net technologies.

Unit – I **Hrs 15**

Distributed Hardware Architecture:

Evolution of personal Computer – PC to PC Communication – Local Area – Network – File server Architecture – Client – Server Architecture – Database Server Architecture – Corporate Network- Intranet – wide Area Network – Internet

Distributed Software Architecture:

Mainframe – File Sharing – Client Server Architecture: Single tier – 2 tiers – 3 tiers – N tier architecture – Distributed Application.

Unit – II: **Hrs 15**

Distributed Application Development using J2EE: (Unit II & III)

J2EE Platform: J2EE Architecture – Containers – J2EE Technologies – Component Technologies – Service Technologies – Communication Technology – Developing J2EE Application

Distributed Computing Using RMI:

RMI Architecture – RMI Exceptions – Developing Applications with RMI – Introduction to Structs Framework

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Unit – III: **Hrs 15**

EJB Architecture and Design:

Introduction to EJB – The EJB Containers – J2EE and its Services – Working With EJB – Session Beans and Business Logic – Entity Beans and Persistence

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Distributed Application Development using .NET: (Unit IV & V)

Unit IV: **Hrs 15**

The NET Architecture:

The vision and goals of .NET – The building blocks of NET – An Overview of .NET framework: The NET Evolution – Design goals of the NET frame work – The NET framework Architecture – An Overview of .NET application.

Unit – V: **Hrs 15**

ASP. NET:

An Introduction to ASP.NET – An Overview of ASP.NET – Programming with ASP.NET – Web Forms and ASP.NET.

Books for Study:

1. Subrahmanyam Allamaraju,"*Professional Java Server Programming*"– *J2EE Edition Vol I* Shroff Publishers and Distributors Pvt. Ltd.

Unit I & II

Chapter 1 – Distributed Application Development using J2EE

Chapter 2 – Distributed Software Architecture

Unit III

Chapter 14,15 &16 – EJB Architecture and Design

Unit IV

2. Kevin Hoffman & Jeff Gabriel, "*Professional .NET Framework*", Shroff Publishers and Distributors Pvt. Ltd.

Chapters 1 & 2 (10 to 64 pages)

Unit V

3. Dave Mercer, "*ASP.NET – A Beginner's Guide*", Tata McGraw Hill Publications Pvt. Ltd.

Chapters 1, 2, 3 & 4

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
IV	**14P4CAEL1B**	**Elective-1B** **UBIQUITOUS COMPUTING**	**5**	**4**

Objectives

To understand the advances in pervasive computing.

Unit – 1 **Hrs 18**

An Introduction to Ubiquitous Computing : Founding Contributions to Ubiquitous Computing - Ubiquitous Computing in U.S. Universities - Ubiquitous Computing in European Laboratories and Universities - Modern Directions in Ubiquitous Computing - The Research Community Embraces Ubiquitous Computing - The Future of Ubiquitous Computing

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Unit - 2 **Hrs 18**

Ubiquitous Computing Systems: Ubicomp Systems Topics and Challenges - Creating Ubicomp Systems-Implementing Ubicomp Systems-Evaluating and Documenting Ubicomp Systems.

Unit – 3 **Hrs 18**

Privacy in Ubiquitous Computing: Understanding Privacy - Technical Solutions for Ubicomp Privacy - Address Privacy. Ubiquitous Computing Field Studies : Three Common Types of Field Studies - Study Design - Participants- Data Analysis - Steps to a Successful Study

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Unit – 4 **Hrs 18**

Ethnography in Ubiquitous Computing - From Ethnography to Design - Design-Oriented Ethnography in Practice. From GUI to UUI: Interfaces for Ubiquitous Computing : Interaction Design-Classes of User Interface-Input Technologies.

Unit – 5 **Hrs 18**

Location in Ubiquitous Computing : Characterizing Location Technologies - Location Systems. Context-Aware Computing : Context-Aware Applications - Designing and Implementing Context-Aware Applications - Issues to Consider when Building Context-Aware Applications- Challenges in Writing Academic Papers on Context Awareness

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Reference:

Ubiquitous Computing Fundamentals-Edited by John Krumm Microsoft Corporation Redmond, Washington, U.S.A.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
IV	**14P4CAEL1C**	**Elective-1C PEER-TO-PEER COMPUTING**	**5**	**4**

Objective

* To know about the Peer-to-Peer computing techniquies.

UNIT-I **Hrs 15**

Overview of Peer-to-Peer: Introduction – Batch Modes - On-Line Modes – Client Server – Peer-to- Peer System. File-Sharing Peer-to-Peer System: Introduction – Famous Napster Model – Gnutella –BitTorrent – Common Features – Legal Challenges – The need for More Powerful Computers: Introduction –Problem of Parallel Computers – CPU Power Sharing Examples – Need for Parallel Algorithms – Metrics in Parallel Systems - Probelms – Desirable Characteristics of P2P Systems – Emabling Technologies – Overview of Our Solution – Comparison

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UNIT - II **Hrs 15**

Werb Server and Related Technologies – Introduction – Web Servers – Apache Tomcat – Starting the Tomcat Server – Better Development Environment – Directories – Mapping Between URL and Servlet – Selection of Web Servers – Introduction to Servlet: Servlets – Servlet Lifecycle – Servlet Collaboration – Basic Structure of Servlet – Sending and Receiving Information – Testing Second Servlet (Without html File) Further Tests – Compiling the Servlet – Java Network Programming – Introduction – URL Connection – Socket Communication – datagram – Difference – Testing and Enhancements of Servlets:Introduction – Debugging Techniques – Global Parameters – Sychronization – Tips to Speed Testing – Troublesshooting.

UNIT - III **Hrs 15**

Power Server: Model1: Intoduction – Model Without Web Server – Model1 –First Test – Second Test TroublesShopoting – Further Tests. PowerServer: Model 2 Introduction – Power Server with Seb Server – Model 2 – Server Side Programs – Phase 1 Testing – invokeServer Program – Phase 2 Testing – Power Server: Model 3 – Server Program of Model 3 –Client Program of Model 3 – divide. Java Module –Sgare2.java Module- Share2.java – Testing – Comparison with Model1.

UNIT-IV **Hrs 15**

Power Server: Model 4 - Introduction –Power Server with Web Server – Model 4 –Server Side Program – Testing the invokeServer2 Program – Testing the system. Power Server – Model 5 : Introduction – Poiwer Server –model5- Server Side Program – Client side Program – Testing – Comparison with Model 4 – Further Tests – Other Improvements. Wireless P2P System: Introduction – IEEE802 Standards – Bluetooth – Iwreless LAN – Wireless Routers – Internet-EnabledDevices – Internet- Enabes Devices – Problems of Mobile Phones- Extending the Power of Mobile Phones – Wireless P2P Systems with Mobile Phones – Implementation of Wireless P2P Systems- Introduction – Client-Mobile Phone- Tier 1 Server Program –phoneServlet.java – Tier 2 Server Side Program – Tools for Mobile Phone Development – Testing for mobile Phone Development – Testing the Wireless P2P – Experiments with More Sub-tasks.

UNIT-V **Hrs 15**

Computer Architecture – Introduction - Classification of Computer Architectures – Granularity –General or Specially Designed Processors - Processor Networks – Shared Networks – Shared Memory Connection . Distributed and Parallel Algorithm – Introduction – Overview of Serial Slorting – Characterisitics of Sortin Algorithms – Parallel Sorting Algorithms for MIMD with shared Memory – Parallel Sorting Algorithms for MIMD with Distuibuted Memory – Infrastructure and Future Development – - Infrastructure –Incentives – Maintenance – Future P2P Development – Problems of Data –Sharing P2P System –Efficient Parallel Algorithms – Re-Visiting Speed Up –Applications- Further Improvements.

REFERENCE BOOK

1. Alfred Wai-Sing Loo, "Peer-to-Peer Computing"- Springer International Edition 2010.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
IV	**14P4CAEL2A**	**Elective-2A ENTERPRISE RESOURCE PLANNING**	**4**	**4**

Objective

* To know about the Peer-to-Peer computing techniques.

Unit I **Hrs 12**

Integrated Management Information - seamless Integration - Supply Chain Management - Integrated data Model - Benefits of ERP - Business Engineering and ERP - Definition of Business engineering - principles of business engineering - Business engineering with information technology.

Unit II **Hrs 12**

Building the Business model - ERP implementation - an Overview - Role of Consultant, Vendors and Users, Customization - precautions - ERP post implementation options - ERP Implementation Technology - Guidelines for ERP Implementation.

Unit III **Hrs 12**

ERP domain - MPG / PRO - IFS /Avalon - Industrial and financial System - Baan IV SAP - Market Dynamics and dynamic strategy.

Unit IV **Hrs 12**

Description - Multi - Client Server solution - Open technology - User Interface - Application Integration.

Unit V **Hrs 12**

Basic architectural Concepts - The system control interfaces - Services - presentation interface - Database Interface.

Reference:

1. Vinod kumar Garg and N.K. Venkita krishnan, "Enterprise Resource Planning - Concepts and practice", PH,1998.

General Reference:

1. Jose Anonio Fernandez, "The SAP R/3 Handbook", Tata Mc Graw Hill publications, 1998.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
IV	**14P4CAEL2B**	**Elective-2B MANAGEMENT INFORMATION SYSTEM**	**4**	**4**

Objective

- To know about various information systems required to design MIS.

Unit I **Hrs 12**

Introduction To Information System: why Study Information System - Why Business Need Information technology - Fundamentals of Information System - Overview of Information Systems.

Unit II **Hrs 12**

Solving Business problems with Information System: System Approach To problem Solving - Developing Information System Solution - Database Management: Managing Data Resources Technical Foundations of Data Base Management.

Unit III **Hrs 12**

Information System For Strategic Advantage: - Fundamentals Of Strategic Advantage - Strategic Application and Issues In It; Managing IT: Enterprise and Management.

Unit IV **Hrs 12**

Business Applications of Information Technology: The Internet And Electronic Commerce - Fundamentals of Electronic Commerce - Information System for Business Operations: Business Information System - Transaction processing System.

Unit V **Hrs 12**

Information System for Managerial Decision Support: Decision Support Systems - Artificial Intelligence Technology In Business - Managing IT - planning for business Change with IT – Implementing Business change with IT - Security & Control Issues in I/S -Ethical And Societal Challenges of Information Technology.

Reference:

1. "Management Information System", James A.O' Brein, Fourth Edition, Galgotia publications, 1999.

General Reference:

1. "Management Information System", Gordon B. Davis Margre the H.Olson, Mc Graw Hill, 3rd Reprint 2000.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
IV	**14P4CAEL2C**	**Elective-2C SOFTWARE PROJECT MANAGEMENT**	**4**	**4**

Objective

- To know about various information systems required to design MIS.

UNIT-I **Hrs 12**

Conventional Software Management: The waterfall model, conventional software Management performance. Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

UNIT-II **Hrs 12**

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections. The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

UNIT-III **Hrs 12**

Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases. Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts. Model based software architectures: A Management perspective and technical perspective. Work Flows of the process: Software process workflows, Iteration workflows.

UNIT-IV **Hrs 12**

Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments. Iterative Process Planning: work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning. Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations. Process Automation: Automation Building blocks, The Project Environment.

UNIT-V **Hrs 12**

Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation. Tailoring the Process: Process discriminants. Future Software Project Management: modern Project Profiles, Next generation Software economics, modern process transitions.

TEXT BOOKS:

1. Software Project Management, Walker Royce: Pearson Education, 2005.

REFERENCE BOOKS:

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw- Hill Edition.
2. Software Project Management, Joel Henry, Pearson Education.
3. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
IV	**14P4CAP7**	**PHP PROGRAMMING LAB**	**3**	**2**

1. Write a server side PHP program that displays marks, total, grade of a student in tabular format by accepting user inputs for name, number and marks from a HTML form.
2. Write a PHP program that adds products that are selected from a web page to a shopping cart.
3. Write a PHP program to access the data stored in a MYSQL table.
4. Write a PHP program interface to create a database and to insert a table into it.
5. Write a PHP program using classes to create a table.
6. Write a PHP program to upload a file to the server.
7. Write a PHP program to create a directory, and to read contents from the directory.
8. Write a shell program to find the details of a user session.
9. Write a shell program to change the extension of a given file.
10. Create a MYSQL table and execute queries to read, add, remove and modify a record from that table.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
IV	**14P4CAP8**	**DISTRIBUTED TECHNOLOGIES LAB**	**3**	**2**

Objectives:

To learn the practical knowledge of using distributed application development packages.

1. Distributed applications using RMI
    a. Simple RMI application
    b. RMI application with a server and more than one client
    c. RMI application with Database Connectivity

2. Web based distributed application in J2EE platform with JSP

3. Enterprise Java Beans
    a. Session Bean
        i. Stateless Session Bean
        ii. Stateful Session Bean
    b. Entity Bean
        i. Container Managed Persistence
        ii. Bean Managed Persistence

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
IV	**14P4CAS4**	**INTERPERSONAL SKILLS**	**3**	**2**

Interpersonal Skills

Understanding others

- Fundamentals of assertiveness
- Understanding difficult people
- Understanding body language
- Steps in understanding others and relationship building

Team building

- Building team and working in teams
- Dos and don'ts in team work
- Roles played by members and by team leaders

Problem solving techniques

- Steps involved in problem solving
- Methods in problem solving
- Creative thinking
- Overcoming problems using creative thinking exercise.

Semester	Subject code	Title of the course	Hours of Teaching /Week	No. of Credits
V	**14P5CA19**	**Core – MOBILE APPLICATIONS**	**6**	**4**

Unit - 1. Overview **Hrs 15**

Introduction: Evolution of Mobile Radio Communications, Present Day Mobile Communication, Fundamental Techniques, How a Mobile Call is Actually Made?, Future Trends, Modern Wireless Communication Systems: 1G: First Generation Networks, 2G: Second Generation Networks, 3G: Third Generation Networks, Wireless Transmission Protocols, Conclusion: Beyond 3G Networks, The Cellular Engineering Fundamentals: What is a Cell?, Frequency Reuse, Channel Assignment Strategies, Hando_ Process, Interference & System Capacity, Enhancing Capacity And Cell Coverage, Trunked Radio System.

Unit – 2 Mobile Operating System **Hrs 15**

Mobile Operating System: Operating system- Process, Task, Thread, ISR and IST, Palm OS, Windows CE, Symbian OS, Linux for mobile devices.

Unit – 3 Android Computing Platforms **Hrs 15**

Introducing the Android Computing Platform- Setting Up Development Environment - Understanding Android Resources - Understanding Content Providers- Understanding Intents - Building User Interfaces and Using Controls.

Unit – 4 Android Designs **Hrs 15**

Working with Menus- Fragments for Tablets and More- Working with Dialogs - Exploring ActionBar-Advanced Debugging and Analysis-Responding to Configuration Changes.

Unit – 5 Android Deployments **Hrs 15**

Working with Preferences and Saving State - Exploring Security and Permissions - Building and Consuming Services - Deploying Your Application: Android Market and Beyond.

Text Book:

Unit – 1
Dr. Abhijit Mitra, Lecture Notes on Mobile Communication, IITG.
Unit – 2
Mobile Computing-Raj, Kamal Oxfrod University Press.

Unit 3, 4, 5
S. Komatineni, D. MacLean, "Pro Android 2", Apress (2012).

Reference book:
Mobile Computing by Asoke k Talukder, Roopa R yavagal Technology, applications and services creation@ 2005, Tata Mc Graw-Hill Publishing Company Limited, First reprint 2006.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
V	**14P5CA20**	**DOT NET FRAMEWORK WITH C# PROGRAMMING**	**6**	**4**

Objective

- To Understand C# features and need of Ajax for Web design

Unit I **Hrs 15**

Introduction to .Net Platform-Common Language Runtime–Common type specification-Common Language specification-Assemblies-.NET Base classes- Microsoft Intermediate Language- CLR Debugger.

Unit II **Hrs 15**

Introduction to C# - Operators-Flow control & Iteration–Array and String–OOPS in C# (Encapsulation, Polymorphism, Inheritance) - Exceptional Handling–Preprocessor directives.

Unit III **Hrs 15**

Implementing ICloneable and IComparable Interface–Introduction to.Net Collections (including custom collection) –Custom indexers- Delegates and Events– Multithreading Synchronization-Programming with Windows Registry.

Unit – IV **Hrs 15**

Basic Vb.net Controls (Code behind C#.net)

Properties ans sample coding for : Form controls Button Controls – Label Controls – Adding Images to a Form's Label – LinkLabel Class – Menu Controls – PictureBox Control – NumericUpDown Controls – ComboBox Control- Displaying an operation's Status using a ProgressBar and Status Bar – TextBox Control – RichTextBox Control – ScrollBar Controls – trackBar Control – ToolBar Control.

Unit - V **Hrs 15**

Database Programming in Vb.Net: Properties and sample coding for Radio Button Control – Using a GroupBox to Group Radio Button – Checkbox control – DomainupDown control – ListBox Control – CheckedListBox Control – DateTimePicker control – monthCalendar control - a tab control – introducation to ADO.net objects – connection, command, Adapters, Data set and data table – sample database application for windows and console enivornment.

References:

1. Robert J. Oberg, "Introduction to C# using. NET", PHI, 2002.
2. Visual basic .net – The complete Reference – Jeffery R.Shapiro, 2008.
3. Andrew Troelsen, "C# and NET platform", Apress, 1 Edition, 2001.
4. Ben Albahari, peter Drayton and Brad Merill, "C# Essentials", SPD, 2001.

Microsoft C# Language Specifications, WP Publishers and Distributors Pvt. Ltd, 2001.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
V	**14P5CAEL3A**	**ELECTIVE - III SOFT COMPUTING**	**6**	**5**

Objective

- To Understand Artificial Intellegence, Neural network and Fuzzy system concepts.

UNIT – I **Hrs 15**

Problems, Problem Spaces and Search: Defining the Problem as a State Space Search – Production Systems – Problem Characteristics – Production System haracteristics – Issues in the Design of Search Programs – Additional Problems. **Heuristic Search Techniques**: Generate and Test – Hill Climbing – Best-First Search – Problem Reduction – Constraint Satisfaction – Means-Ends Analysis.

UNIT - II **Hrs 15**

Knowledge Representation Issues: Representing and Mappings – Approach to Knowledge Representation – Issues in Knowledge Representation – The Frame Problem. **Using Predicate Logic:** Representing Simple Facts in Logic – Representing Instance and Isa Relationships – Computable Functions and Predictions – Resolution. **Representing Knowledge using Rules:** Procedural versus Declarative knowledge – Logic Programming–Logic Programming–Forward versus Backward Reasoning-Matching.

UNIT - III **Hrs 15**

Artificial Neural Networks: Concepts –Neural Attributes –Modeling-basic model of a Neuron-Learning in Artificial Neural Networks-Characteristics of ANNs-Important ANNs Parameter-Artificial Neural Network Topology-Learning Algorithm-Discrimination ability-ANN adaptability-The Stability-Plasticity Dilemma. **Neural Network Paradigms:** McCulloch-Pitts Model**-**The Perceptron

UNIT - IV **Hrs 15**

ADALINE and MADALINE Models:-Winner-Takes-All Learning Algorithm-Back-Propagation Learning Algorithm-Cerebellum Model Articulation controller(CMAC)-Adaptive Resonance Theory(ART) Paradigm-Hopfield Model-Competitive Learning Model-Memory Type Paradigms-Linear Associative Memory (LAM) – Real Time Models – Linear Vector Quantization(LVQ) Self-Organizing Map(SOM) Probabilistic Neural Network(PNN) – Radial Basis Function(RBF) – Time –Delay Neural Net(TDNN) Cognitron and Necognitron Models- Simulated Annealing – Boltzmann Machine- Other Paradigm.

UNIT - V **Hrs 15**

FUZZY LOGIC: Propositional Logic – The Membership function – Fuzzy logic – Fuzzy Rule Generation – Defuzzication of Fuzzy Logic – Time- Dependent Fuzzy Logic – Temporal Fuzzy Logic(TFL) - Applying Temporal Fuzzy Operators – Defuzzification of Temporal Fuzzy Logic – Example: Applicability of TFL in Communications Systems- Fuzzy Neural Networks – Fuzzy Artificial Neural Network(FANN) Fuzzy Neural Example- Neuro-Fuzzy Control- Fuzzy Neural Net –A Reality? **Applications:** Signal Processing –Image Data Processing – Communication Systems- Intelligent Control- Optimization Techniques- Other Applications – Tools and Companies.

Text Book:

1. Stamatios V.KartaLopoulos , "understnading Neural Networks and Fuzzy logic". Prentice –Hall of India Private Limited, New Delhi, 2000.

Elaine Rich and KevinKnight,"Artificial Intelligence" Second Edition, Tata McGraw – Hill publishing Computing ltd. NewDelhi,1999.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
V	**14P5CAEL3B**	**ELECTIVE - III CLOUD BASED WEB SERVICES**	**6**	**5**

Objective

- To understand various services of web

UNIT I **Hrs 15**

Introduction to Web Services – XML Fundamentals - Client/Server, CORBA, JAVA RMI, Micro Soft DCOM, MOM - Challenges in Distributed Computing - Components of Webservices – SOAP – WSDL – UDDI – SOAP Sever.

UNIT II **Hrs 15**

Cloud components - Cloud architecture - Cloud delivery model – SPI framework, SPI evolution, SPI vs. traditional IT Model - Cloud deployment model - Virtualization and Cloud Computing – Web services through Cloud.

UNIT III **Hrs 15**

Web Services Interoperability **–** Means of ensuring Interoperability, Overview of .NET and J2EE. Calling a Web Service by Using a Proxy - Creating a Simple web service - Creating and Calling a Web Service by Using Visual Studio .NET.

UNIT IV **Hrs 15**

The J2EE Web Service APIs - SOA support in J2EE – SOAP web service example in java using eclipse **-** RESTful webservices - Building webservices with JAX-WS – Building RESTful webservices with JAX-WS.

UNIT V **Hrs 15**

Web Services Security – XML security frame work, XML encryption, XML digital signature, XKMS structure, guidelines for signing XML documents. XML Serialization in the .NET Framework.

Text book : Compiled and edited by T.S.Baskaran, Dept of Computer Science,A.V.V.M Sri Pushpam College.

REFERENCE BOOKS

1. Cloud computing a practical approach-Anthony T.Velte, Toby J. Velte Robert Elsenpeter TATA McGraw- Hill, New Delhi – 2010.
2. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que 2008.
3. Developing Java Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, Wiley India, rp – 2008.
4. Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education, 2008.
5. XML, Web Services, and the Data Revolution, F.P.Coyle, Pearson Education.
6. Building Web Services with Java, 2nd Edition, S.Graham and others, Pearson Edn., 2008.
7. Java Web Services, D.A. Chappell & T. Jewell, O'Reilly,SPD.
8. J2EE Web Services, Richard Monson-Haefel, Pearson Education.
9. Java Web Services Programming, R.Mogha, V.V.Preetham, Wiley India Pvt. Ltd.,

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
V	**14P5CAEL3C**	**Major Elective –III DATA MINING & DATA WAREHOUSING**	**6**	**5**

Objective

- To know about the architecture and application areas of Data ware housing and Mining.

UNIT I **Hrs 15**

Introduction – data mining –data mining functionalities – classification of data mining systems – data mining task primitives- integration of a Data mining system with a database or data warehouse system – Descriptive Data Summarization -Data processing - Data cleaning – data integration and transformation - data reduction- data discretization and concept of hierarchy generation.

UNIT II **Hrs 15**

Data ware housing and OLAP Technology - A Multidimensional Data Model - data warehouse architecture - Data Warehouse implementation- from data warehousing of data mining.

UNIT III **Hrs 15**

Classification and Prediction - what is classification? what is Prediction? -Issues regarding classification and Prediction - classification by decision Tree Induction.

UNIT IV **Hrs 15**

Cluster analysis - Types of Cluster Analysis Partitioning Methods - Hierarchical methods -Density based methods.

UNIT V **Hrs 15**

Applications and Trends in data mining- data mining Application , Social Impacts of Data mining -Trends in data mining - Data mining system Products and research Prototypes

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References:

1. "Data Mining concepts and techniques", Jiawei Han and Micheline Kamber, Second Edition, Morgan Kaufman Publishers - 2006.

2. "Data Ware housing in the Real World", Sam Anahory and Dennis Murray, Addition Wesely, Pearson Education Asia Pvt. Ltd, 2000.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
V	**14P5CAEL4A**	**Elective - IVA HUMAN COMPUTER INTERACTION**	**5**	**4**

Objective

- To Understand the concepts and techniques for effective interaction between Human and Computers

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Unit I: **Hrs 15**

Cognitive Psychology and Computer Science - Capabilities of Human–Computer Interaction (HCI)-Goals of Human–Computer Interaction (HCI)-Roles of Human, Computer and Interaction in HCI- Basic User Interfaces - Advanced User Interfaces - Justification of Interdisciplinary Nature - Standard Framework of HCI -HCI Design Principles -Interface Levels in HCI- Steps in Designing HCI Applications-Graphical User Interface Design -Popular HCI Tools-Architecture of HCI Systems- Advances in HCI-Overview-HCI Sample Exercises **Usability Engineering -**Introduction-HCI and Usability Engineering -Usability Engineering Attributes-Process of Usability-Need for Prototyping.

Unit II **Hrs 15**

Modelling of Understanding Process- Introduction- Goals, Operators, Methods and Selection Rules (GOMS) - Cognitve Complexity Theory (CCT) - Adaptive Control of Thought-Rational (ACT-R) - State, Operator, and Result (SOAR) -Belief-Desire-Intention (BDI) - ICARUS-Connectionist Learning with Adaptive Rule Induction On-line (CLARION) -Subsumption Architecture -**Spoken Dialogue System -** Introduction -Factors Defining Dialogue System - General Architecture of a Spoken Dialogue System**-**Dialogue Management (DM) Strategies -Computational Models for Dialogue Management-Statistical Approaches to Dialogue Management - Learning Automata as Reinforcement Learners -Case Study: Learning Dialogue Strategy Using Interconnected Learning Automata -Software and Toolkits for Spoken Dialogue Systems Development.

Unit III **Hrs 15**

Recommender Systems- Introduction- HCI Study Based on Personalisation - Personalisation in Recommender Systems -Relation between Information Filtering and Recommender Systems -Application Areas of Recommender Systems-Recommender System Field as an Interdisciplinary Area of Research-Phases of Recommender Systems -User Profiling Approaches-Classification of Recommendation Techniques -Advantages and Disadvantages of Recommender System Approaches -Need of Software Agent-based Approach in Recommender Systems-Evaluating Recommender Systems-Integrated Framework for Recommender Systems-Case Study: Music Recommender System .

Unit IV **Hrs 15**

Advanced Visualisation Methods - Ontology Definition -Ontology Visualisation Method -Space Dimensions of Ontology Visualisation -Ontology Languages -Ontology Visualisation Tools -Ontology Reasoning –Reasoner Case Study 1: Teaching Ontology with C Programming Language -Case Study 2: Activity for Ontology Creation with a Case of a Software Company Scenario -Case Study 3: Activity for History Ontology Creation.

Unit V **Hrs 15**

Ambient Intelligence: The New Dimension of Human–Computer Interaction - Introduction - Ambient Intelligence Definition-Context-aware Systems and Human–Computer Interaction -Middleware - Modelling Data for AmI Environment - Development of Context-awareness Feature in Smart Class Room— A Case Study - Context-aware Agents for Developing AmI Applications—A Case Study

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Text book:

1. K. Meena, R. Sivakumar, ”Human–Computer Interaction”, PHP Learning Private limited Delhi-110092, 2015.

Reference:

1. ”Alan Dix, Janet Finlay, Gregory D.Abowd, Russell Beale”, "Human-Computer Interaction”, 3rd Edition, Pearson publications, 2008.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
V	**14P5CAEL4B**	**ELECTIVE – IV REAL TIME SYSTEMS**	**5**	**4**

Objective

- To know about the concepts and techniques in real time systems.

UNIT I **Hrs 15**

Characterizing Real-Time Systems and Tasks: Introduction – Performance Measures for Real-Time Systems – Properties of Performance Measures – Traditional Performance Measures – Per formability – Cost Functions and Hard Deadlines – Discussion. Estimating Program Run Times – Analysis of Source Code – Accounting for Pipelining – Caches – Virtual Memory.

UNIT II **Hrs 15**

Task Assignment and Scheduling: Introduction – Notation – Classical Unprocessed scheduling Algorithms – Rate Monotonic scheduling algorithm - Preemptive Earliest Deadline First(EDF)Algorithm – Allowing for Precedence and Exclusion conditions – Using Primary and Alternative Tasks – Task Assignment – Utilization-Balancing Algorithm – A Next-Fit algorithm for RM Scheduling – A Bin-Packing Assignment Algorithm for EDF – A Myopic Offline Scheduling(MOS) Algorithm – Focused Addressing and Binding(FAB) Algorithm – The Buddy Strategy – Assignment with precedence conditions.

Note: Only theoretical concepts of above scheduling. Exclude Proofs and Theorems

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UNIT III **Hrs 15**

Programming Languages and Tool: Introduction – Desired language characteristics Data typing – Control structures – Facilitating hierarchical decomposition – Blocks – Procedures and functions – packages – Run-time Error(Exception) Handling – Overloading and generics – Multitasking – Low-Level programming- Task scheduling – Task Dispatching policy – Entry Queuing policy – protected data types – Timing specifications – Some Experimental languages – Flex – Euclid – Programming Environments – Run-Time support- Compiler – Linker - Debugger – Kernel – Suggestions for Further Reading.

UNIT IV **Hrs 15**

Real time Databases: Introduction – Basic definitions – Real-time Vs General-Purpose databases – Absolute vs. Relative Consistency – Need for response-time predictability – Relaxing the ACID properties – Main memory databases – Transaction priorities – Transaction Aborts – Concurrency control Issues – Pessimistic Concurrency control – Optimistic concurrency control-Disk scheduling Algorithms – A Two-Phase approach to improve predictability – Maintaining serialization consistency – Serialization consistency without alteration of serialization order – Serialization consistency with alteration of serialization order – Databases for Hard real-time systems.

UNIT V **Hrs 15**

Real-time Communication: Communications media – Network topologies – sending messages–Network architecture issues – Protocols – Contention-Based Protocols – Token-based protocols – Stop-and-Go Multi hop Protocol–The polled bus protocol – Hierarchical round-robin protocol – Deadline-based Protocols–Fault-Tolerant routing.

Text Book:

1. REAL-TIME SYSTEMS C.M.Krishna and Kang G.Shin The McGraw-Hill Companies, Inc.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
V	**14P5CAEL4C**	**ELECTIVE - IV SOFTWARE COMMUNICATION AND DOCUMENTATION**	**5**	**4**

Objective

- To know about the concepts of Software Communication and Documentation

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Unit I BASIC CONCEPTS **Hrs 15**

Importance of communication and documentation; Different types of communications; Spoken communication; written communication; Different types of documentation.

Unit II SPOKEN INDIVIDUAL SPOKEN COMMUNICATION **Hrs 15**

Elements of good individual communication – getting over nervousness – organizing one self – characteristics of effective communication – augmenting spoken words by actions and other means – other aspects of spoken communication like speeches; presentation; use of visual aids.

Unit III GROUP COMMUNICATION **Hrs 15**

Meeting – Effective participation – effective management of meetings – preparing minutes – "Virtual" meetings – audio conference – video conference – use of collaboration tools.

Unit IV DIFFERENT TYPES OF WRITTEN COMMUNICATION **Hrs 15**

Principles of effective written communication – differences between written communication and spoken communication – resume writing – email; effective email techniques – proposals – contracts – user guides – external technical documentation for software – internal software technical documentation – users guides – letters and different types of letters – legal issue.

Unit V TECHNOLOGY AND STANDARDS **Hrs 15**

Use of various tools and technologies – need for standardization – role of processes and standards in documentation – on-line help – Impact of internet on documentation – common challenges in the harnessing of technology ; course summary.

Text books:

1. Huckin, et al, Technical Writing and Professional Communication, McGraw Hill, 1991.
2. Ron Ludlow and Fergus Panton, The Essence of Effective Communication, PHI (P) Ltd., New Delhi, 1995.

References:

1. W.R. Gordin and Edward W. Mammen : The Art of Speaking Made Simple, Rupa & Co.,1982.
2. Sushil Bahl : Business Communication Today, Response Books, New Delhi, 1996.
3. Eyre, Effective Communication Made Simple, W.H. Allen, London, 1979.
4. Gloria Wilson and Garry Bitter, Learning Media Design (Text and CD Rom), PHI (P) Ltd., New Delhi, 1998.
5. Simmon Collin – Multimedia Made Simple Asian Books (P) New Delhi, 1996.
6. Bennet – Illustrated World of DTP Dreamland Publications, New Delhi, 1998.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
V	**11P5CAP9**	**Core PL Lab IX MOBILE APPLICATIONS LAB**	**3**	**2**

OBJECTIVES

- Building mobile applications.
- Availing variety of mobile brands and models for testing objectives in same location.
- Pushing the innovation in mobile applications.

Perform the experiments in J2ME / Android SDK framework

1. Form design for mobile applications.
2. Applications using controls.
3. Graphical and Multimedia applications.
4. Data retrieval applications.
5. Networking applications.
6. Gaming applications
7. Micro browser based applications using WAP, WML and WML scripts
8. Checking the phone number validation using Text box
9. SlideShow example
10. TextBox Capturing Program
11. Ticket List Program

Program for question & answer with commands Program

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
V	**14P5CAP10**	**Core –PL-Software Lab – C# PROGRAMMING LAB**	**3**	**2**

Objective

- To understand Programming techniques in c#.

Console Applications

1. C# .net program for Ascending Order and Descending Order.
2. C# .net program for Matrix Multiplication.
3. C# .net program for Stack and Queue collections.
4. C# .net program to perform various string operations.
5. C# .net program to insert, select, delete and update student name , register number and five subject mark list with total and average in MS Access data base.

Web Applications

6. C# .net program to display browser capabilities.
7. C# .net program to perform Range validation, Required Field Validation, Compare Validation and Custom Validation.
8. C# .net program to display a MS Access student database in Grid View.
9. C# .net program to display a MS Access employee database in form View.

Create a ASP.net web service for arithmetic operations and deploy the same.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
V	**14P5CAS5**	**Business Models –IT Industries**	**3**	**2**

Objective

- To Know about industries and to get orientation in standards of quality and process.

Industry Verticals/ Domains

- Fundamentals of business.
- Types of businesses like Manufacturing, Retail, Telecom, Banking, Insurance, Logistics / SCM, Public Sector etc.

Quality Orientation

- Students should be exposed to various quality standards that are followed by the industries like ISO, CMM, PCMM, CMMI, BS7799 and TickIT.

Process Orientation

- Students should be exposed to various process standards that are followed by the industries like Six sigma, Five S, Lean, TQM, TPM, Kaizen, Kanban etc.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
VI	**14P6CAPR**	**Project**	**Six months**	**10**

Main Project

Objective

- To master technical and Software Development Skills.

- Students have to undergo industrial Software Development projects using recent technologies.