KONGU ENGINEERING COLLEGE, PERUNDURAI, ERODE – 638 052
(Autonomous Institution affiliated to Anna University of Technology, Coimbatore)

P.G. DEGREE IN MASTER OF COMPUTER APPLICATIONS

CURRICULUM
(For the candidates admitted from academic year 2011 – 2012 onwards)

SEMESTER – I

Course Code	Course Title	Hours/ Week			Credit	Maximum Marks		
		L	T	P		CA	ESE	Total
	THEORY							
11MC101	Theory of Computing	3	0	0	3	50	50	100
11MC102	Accounting and Financial Management	3	0	0	3	50	50	100
11MC103	Digital Fundamentals and Computer Organization	3	1	0	4	50	50	100
11MC104	Problem Solving Techniques	3	0	0	3	50	50	100
11MC105	Programming in C	3	1	0	4	50	50	100
	PRACTICAL							
11MC106	Communication Skill Lab	0	0	2	1	50	50	100
11MC107	Programming in C Laboratory	0	0	3	1	50	50	100
11MC108	Linux Scripting Laboratory	0	0	3	1	50	50	100
11MC109	Office Automation Laboratory *	0	0	2	0			
				Total	**20**			

CA – Continuous Assessment, ESE –End Semester Examination,*Self Study

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SEMESTER – II

Course Code	Course Title	Hours/Week			Credit	Maximum Marks		
		L	T	P		CA	ESE	Total
	THEORY							
11MC201	Data Structures and Algorithms	3	1	0	4	50	50	100
11MC202	Object Oriented Programming	3	0	0	3	50	50	100
11MC203	Database Management Systems	3	0	0	3	50	50	100
11MC204	System Software and Operating Systems	3	1	0	4	50	50	100
11MC205	Computer Oriented Numerical Methods and Statistics	3	0	0	3	50	50	100
	PRACTICAL							
11MC206	Data Structures and Algorithms Laboratory	0	0	3	1	50	50	100
11MC207	Object Oriented Programming Laboratory	0	0	3	1	50	50	100
11MC208	Database Management Systems Laboratory	0	0	3	1	50	50	100
11MC209	PC Hardware & Software Installation Laboratory*	0	0	2	0			
	Total				**20**			

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SEMESTER –III

Course Code	Course Title	Hours/ Week			Credit	Maximum Marks		
		L	T	P		CA	ESE	Total
	THEORY							
11MC301	Computer Networks	3	1	0	4	50	50	100
11MC302	Visual Programming	3	0	0	3	50	50	100
11MC303	Unix and Network Programming	3	0	0	3	50	50	100
11MC304	Java Programming	3	1	0	4	50	50	100
11MC305	Software Engineering	3	0	0	3	50	50	100
	PRACTICAL							
11MC306	Visual Programming Laboratory	0	0	3	1	50	50	100
11MC307	Unix and Network Programming Laboratory	0	0	3	1	50	50	100
11MC308	Java Programming Laboratory	0	0	3	1	50	50	100
11MC309	Multimedia Laboratory *	0	0	2	0			
				Total	**20**			

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SEMESTER –IV

Course Code	Course Title	Hours/ Week			Credit	Maximum Marks		
		L	T	P		CA	ESE	Total
	THEORY							
11MC401	Object Oriented Analysis Design	3	0	2	4	50	50	100
11MC402	Enterprise Computing	3	0	0	3	50	50	100
11MC403	Web Technology	3	0	0	3	50	50	100
	Elective - I	3	0	0	3	50	50	100
	Elective - II	3	0	0	3	50	50	100
	PRACTICAL							
11MC404	Enterprise Computing Laboratory	0	0	3	1	50	50	100
11MC405	Web Technology Laboratory	0	0	3	1	50	50	100
11MC406	Mini Project	0	0	4	2	50	50	100
11MC407	Open Source Systems Laboratory *	0	0	2	0			
				Total	**20**			

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SEMESTER – V

Course Code	Course Title	Hours/Week			Credit	Maximum Marks		
		L	T	P		CA	ESE	Total
	THEORY							
11MC501	Software Project Management	3	0	0	3	50	50	100
11MC502	XML and Web Services	3	0	0	3	50	50	100
11MC503	Software Testing	3	0	0	3	50	50	100
	Elective - III	3	0	0	3	50	50	100
	Elective - IV	3	0	2	4	50	50	100
	PRACTICAL							
11MC504	XML and Web Services Laboratory	0	0	3	1	50	50	100
11MC505	Software Testing Laboratory	0	0	3	1	50	50	100
11MC506	Mini Project - II	0	0	4	2	50	50	100
				Total	**20**			

CA – Continuous Assessment, ESE – End Semester Examination

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CURRICULUM
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SEMESTER – VI

Course Code	Course Title	Hours/Week			Credit	Maximum Marks		
		L	**T**	**P**		**CA**	**ESE**	**Total**
11MC601	Project Work	0	0	24	12	100	100	200
	Total				**12**			

CA – Continuous Assessment, ESE – End Semester Examination

LIST OF ELECTIVES

Course Code	Course Title	L	T	P	C
	ELECTIVE – I (IV SEMESTER)				
11MC011	Mobile Computing	3	0	0	3
11MC012	Distributed Computing	3	0	0	3
11MC013	Network Administration	3	0	0	3
11MC014	Cryptography and Network Security	3	0	0	3
11MC015	TCP/IP Protocol suite	3	0	0	3
11MC016	Parallel Programming	3	0	0	3
	ELECTIVE – II (IV SEMESTER)				
11MC021	Resource Management Techniques	3	0	0	3
11MC022	Computer Graphics	3	0	0	3
11MC023	Microprocessor	3	0	0	3
11MC024	Compiler Design	3	0	0	3
11MC025	Human Resource Management	3	0	0	3
11MC026	Java Design Patterns	3	0	0	3
	ELECTIVE – III (V SEMESTER)				
11MC031	Data Mining	3	0	0	3
11MC032	Soft Computing	3	0	0	3
11MC033	Artificial Intelligence	3	0	0	3
11MC034	Business Intelligence and its Applications	3	0	0	3
11MC035	Semantic Web	3	0	0	3
11MC036	Service Oriented Architecture	3	0	0	3
	ELECTIVE - IV (V SEMESTER)				
11MC041	Grid Computing	3	0	2	4
11MC042	Cloud Computing	3	0	2	4
11MC043	Mobile Application Development	3	0	2	4
11MC044	C# and ASP. NET	3	0	2	4
11MC045	Digital Image Processing	3	0	2	4
11MC046	Advanced Web Development	3	0	2	4

11MC101   THEORY OF COMPUTING

3   0   0   3

Objective:
- To make the students familiar about mathematical logic and set theory
- To learn the concepts of automata theory, grammars and languages

MODULE - I   **15**
Logic and Set Theory: Propositions – Logical Operators – Truth Table - Statement Formula - Tautologies and Contradictions – Equivalence and Implications – Normal Forms – Laws of Logic – Proofs in Propositional Calculus – Predicates – Variables – Quantifiers – Standard Forms – Inference in Predicate Calculus – Mathematical Induction - Set Notation and Description – Basic Set Operations – Venn Diagrams – Laws of Set Theory – Principles of Inclusion and Exclusion – Partition – Cartesian product.

MODULE - II   **15**
Relations and Functions: Relations – Composition – Identity - Inverse – Properties of Relations – Equivalence Relations – Relation Matrix – Partial Ordering - Transitive Closure - Warshall's Algorithm - Functions – Injective - Surjective and Bijective- Composition- Properties of Composite of Functions - Inverse Functions.

MODULE - III   **15**
Formal Languages and Automata Theory: Four Classes of Grammars: Phrase Structure - Context Sensitive - Context Free - Regular – Construction of Grammars for Languages – Derivation of Languages from Grammars-Basic Concepts of Automata Theory - Deterministic Finite State Automaton (DFA) - Non Deterministic Finite State Automaton (NFA) – Equivalence of DFA and NFA – Regular Expressions and DFA – Pushdown Automata (PDA) – Definition – Equivalence of Acceptance by Final state and Empty Stack – Equivalence of PDA's and Context Free Languages.

TOTAL:45

REFERENCE BOOKS
1. Hopcroft John.E, Ullman Jeffrey D and Motwani R, "Introduction to Automata Theory Languages and Computation", Addison-Wesley, 2005.
2. Kenneth Rosen. H, "Discrete Mathematics and its Applications", Tata McGraw Hill, 2007.
3. Tamilarasi.A and Natarajan A.M, "Discrete Mathematics & its Applications", Khanna Publishers, 2008.

11MC102   ACCOUNTING AND FINANCIAL MANAGEMENT

<div align="right">3   0   0   3</div>

Objective:
To introduce the basic concepts of accounting
- Journal, ledger and trial balance
- Ratio analysis, cost accounting
- Financial management and budgeting

<div align="right">15</div>

MODULE – I
Financial Accounting: Meaning and Scope of Accounting: Basic Concepts and Conventions of Accounting. Accounting cycle – Preparation of Journal Ledger - Trial Balance - Trading Account- Profit - Loss Account - Balance Sheet Analysis.

MODULE - II   **15**
Cost Accounting and Management Accountancy: Ratio Analysis: Introduction – Classification of Ratios - Advantages and Limitation of Ratio. Methods and Techniques of Cost Accounting: Classification of Cost – Material Cost - Labour Cost - Overheads – Cost sheet.

MODULE - III   **15**
Budgeting and Financial management: Budget and Budgetary Control: Meaning – Types – Flexible Budgeting – Cash Budget – Master Budget – Zero Base Budgeting. Financial Management: Objectives and Functions of Financial Management: Risk – Return Relationship – Time Value of Money Concepts.

<div align="right">**TOTAL:45**</div>

REFERENCE BOOKS
1 Maheswari S N, "Financial and Management Accounting", Third Edition, Sultan Chand and Sons, 2007.
2 Mukherjee A and Hanif M, "Financial Accounting", Tata McGraw-Hill education Pvt Ltd, 2007
3 Maheswari S N, "Principal of Management Accounting", Sultan Chand and Sons, New Delhi, 2007.
4 Pandey I.M, "Financial Management" Vikas Publishing, 2007.
5 Palanivelan V.R "Accounting for Management", 2nd edition University Science Press, New Delhi 2009.
6 Vijayakumar T, "Accounting for Management", Tata McGraw-Hill education Pvt Ltd, 2010

11MC103   DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION

3   1   0   4

Objective:
- To introduce concepts of digital design principles
- To impart the knowledge on computer organization and architecture

MODULE - I   **15**

Number System and Digital Logic Circuits: Number System: Binary – Decimal – Octal-Hexadecimal – Number Conversion– Complements - Binary codes – Boolean Algebra: Basic Logic Gates – Basic Theorems and Properties of Boolean Algebra – NAND, NOR implementation – Simplification of Boolean Functions - Sum of Products – Product of Sums – Karnaugh map – Tabulation Method – Don't Care Conditions - Flip-flops: RS Flip-flop - D Flip-flop - JK Flip-flop – Registers – Shift Registers – Ripple counters – Synchronous counters.

MODULE - II   **15**

CPU Organization : Combinational Logic**:** Adder – Subtractor - Parallel Adders - Multiplexers – Demultiplexers – Decoders – Encoders - Register Transfer and Micro Operations: Arithmetic Micro operations – Logic Micro operations – Shift Micro operations – Arithmetic Logic Shift unit – Central Processing Unit: General Register Organization - Stack Organization – Instruction formats – Addressing modes – Data Transfer and Manipulation – Program Control

MODULE - III   **15**

I/O and Memory Organization: Input-Output Organization - Peripheral Devices – Input–Output interface – Asynchronous Data Transfer (Strobe & Handshaking Method) – Modes of Transfer – Priority Interrupt – Direct Memory Access – Input-Output Processor - Serial Communication – Memory Organization - Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory.

Lecture:45, Tutorial:15, TOTAL:60

REFERENCE BOOKS
1   Morris Mano. M, "Digital Logic and Computer Design",   Prentice Hall of India Pvt. Ltd., New Delhi, 2007.
2   Morris Mano. M, "Computer System Architecture", 3rd Ed., Prentice Hall of India Pvt. Ltd., New Delhi, 2005.
3   Morris Mano. M, "Digital Design", 3rd Ed., Prentice Hall of India Pvt. Ltd., New Delhi, 2003.
4   Leach Donald.P and Malvino Albert Paul, "Digital Principles And Applications", 5th Edition, Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.
5   Hamacher Carl, Safwat Zaky, and Zvonko Vranesic , " Computer Organization", 5th Edition Tata McGraw-Hill, New Delhi, 2007.

11MC104 PROBLEM SOLVING TECHNIQUES

3 0 0 3

Objective:
- To understand problem solving techniques
- To enrich the knowledge of algorithm development
- To learn the implementation of algorithm description

MODULE – I   15
Introduction and Fundamental Algorithms: Introduction – Problem-solving Aspect - Top-down Design - Implementation of Algorithms - Efficiency of Algorithms - Fundamental Algorithms: Exchanging the values of Two Variables – Counting - Summation of a set of Numbers - Factorial Computation-Sine Function Computation - Generation of the Fibonacci Sequence - Reversing the Digits of an Integer - Base Conversion-Character to Number Conversion.

MODULE-II   15
Factoring Methods and Array Techniques: Finding the square Root of a number - Smallest Divisor of an Integer -Greatest Common Divisor 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 - Array Order Reversal - Array Counting - 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.

MODULE - III   15
Searching and Text Processing: Two-way Merge - Sorting by Selection - Sorting by Exchange- Sorting by Insertion - Sorting by Diminishing Increment - Sorting by Partitioning - Binary Search - Hash Searching - Text Line Length Adjustment - Left and Right Justification of Text - Keyword Searching in Text - Text Line Editing - Linear Pattern Search – Sub Linear Pattern Search.

TOTAL:45

REFERENCE BOOKS
1. Dromey,R.G., "How to Solve it by Computer", Pearson Education, India, 2007.
2. Seymour Lipschutz, "Essentials Computer Mathematics", Schaums' outlines series, Tata McGrawHill, 2004.

11MC105   PROGRAMMING IN C

3   1   0   4

Objective:
- To introduce basic concepts of structured programming language
- To make the students familiar about the concepts of pointers and files
- To develop simple applications using C languages

MODULE – I   15

Introduction to C Language: Introduction to C - Types of programming languages Desirable Program Characteristics – Identifiers - Keywords - Data Types - Constants - Variables - Operators and Expressions - Data Input and Output – Formatted I/O – Control Statements.

MODULE-II   15

Functions and Pointers: Functions - Recursion – Storage Class - Arrays: Multidimensional Arrays – Strings - Pointers: Concepts -   Pointers and Function: Passing Pointer to a Function - Function Pointers - Pointers and Arrays: Array of Pointers - Pointer to an Array - Dynamic Memory Allocation.

MODULE- III   15

User Defined Data types and Files: User Defined Data Types: typedef Statement - Structures and Unions: Definition - Structures and Arrays - Structures and Function - Structures and Pointers - Nested Structures – Self -referential Structures – Union – Files: File Operations - File I/O – Sequential File - Random Access - Binary files – Bit Fields – Additional Features - Enumerations- Command Line Arguments - Macros - C Preprocessor - Multifile Programs - Case Study- Dictionary Implementation.

Lecture:45, Tutorial:15, TOTAL:60

REFERENCE BOOKS

1. Gottfried Byron. S, "Programming with C", 2nd edition, Tata McGraw Hill, 2006.
2. Dennis Ritchie.M, Brain Kernighan. W, "The C Programming Language ", Second Edition, Prentice Hall of India, New Delhi, 1998.
3. Ganesh. S, "Deep C", BPB Publications, 2003.
4. Schildt Herbert, "C: Complete Reference", Fourth Edition, Tata McGraw-Hill, New Delhi, 2000.

11MC106   COMMUNICATION SKILLS PRACTICE

0   0   2   1

LIST OF EXPERIMENTS

1. Audio—Visual Aids Oriented Comprehension Skills Based Listening
2. Situational Dialogues / Role play / Speech on Different Situations / Facing Interviews
3. Official Speaking Skills : Seminars / Conferences / Workshops
4. Team Skills: Group Discussion – as a Participant and as a Moderator – using Accurate and Current
5. Grammatical Patterns
6. Presentation Skills for Technical Papers / Project Reports / Professional Reports Employing Proper
7. Stress and Intonation Mechanics
8. Preparing Job Application Letter and Resume.
9. Research Paper Writing and Editing and Proof Reading

11MC107   PROGRAMMING IN C LABORATORY

0   0   3   1

LIST OF EXPERIMENTS
Implement in Linux Environment

1. Display the following
   - i.   Floyd's triangle
   - ii. Pascal Triangle
2. Generate the following series of numbers
   - i.   Armstrong numbers between 1 to 100
   - ii.   Prime numbers between 1 to 50
   - iii. Fibonacci series up to N numbers
3. Manipulate the strings with following operations
   - i.   Concatenating two strings
   - ii.   Reversing the string
   - iii. Finding the substring
   - iv.   Replacing a string
   - v.   Finding length of the string
4. Find the summation of the following series
   - i.   Sine
   - ii.   Cosine
   - iii. Exponential
5. Create the sales report for M sales persons and N products using two dimensional arrays
6. Simulate following Banking operations using Functions
   - i.   Deposit
   - ii.   Withdrawal
   - iii. Balance Enquiry
7. Implement using Recursion
   - i.   Find the solution of Towers of Hanoi problem using recursion
   - ii.   Fibonacci number generation.
   - iii. Factorial
   - iv.   GCD
8. Generate Student mark sheets using Structures
9. Create a collection of books using arrays of structures and do the following
   - i.   Search a book with title and author name
   - ii.   Sorts the books on title
10. Perform String operations using Pointers
11. Program to implement Dynamic Memory Allocation
12. Program to Read and display Sequential and Random access file

11MC108   LINUX SCRIPTING LABORATORY

0   0   3   1

LIST OF EXPERIMENTS
1. Basic commands in Linux
2. Program using vi editor
3. Program using make utility
4. Program using shell script.
5. Programs using control structures
6. Programs using array
7. Program using Filters
8. Directory operations
9. File manipulations
10. File Permission
11. Programs using ruby script
12. Programs using awk script

11MC109   OFFICE AUTOMATION LABORATORY

0	0	2	0

LIST OF EXPERIMENTS

MS Word

1. Creating and Formatting a simple document
2. Creating a document and apply the Automatic formatting and Styles
3. Navigating Long document with the Document Map
4. Working with Tables
5. Mail Merge

MS Excel

1. Creating the worksheets and Formatting the worksheets
2. Working with functions and formulae for Calculations.
3. Presenting data with Charts.
4. Sorting , Filtering and Macros

MS POWER POINT

1. Create a presentation using image, graph and table
2. Presentation using animation

MS ACCESS

1. Table creation and manipulation
2. Query and Forms
3. Report generation with customized database

TALLY

1. Creation of company, Accounts Configuration, Classification of Accounts using Tally.
2. Accounts Masters, Accounts Voucher – Voucher Entry, conversion, Interest Calculation, Printing of voucher using Tally.
3. Create a Contra Voucher, Payment and Receipt Voucher using Tally.
4. Create Sales and Purchase Voucher, Credit notes and Debit notes using Tally.
5. Create Trading Account, Profit / Loss Account, Balance Sheet using Tally.

<div align="center">

11MC201 DATA STRUCTURES AND ALGORITHMS

</div>

<div align="right">

3   1   0   4

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Objective:

- To explore the primitive and non primitive data types and its application
- To learn about the methods to improve search techniques
- To get an in depth knowledge about algorithms and computing time analysis

MODULE – I   **15**

Abstract Data Types and Trees: Lists, Stacks and Queues : Abstract Datatype - Stack - Queue - Evaluation of Expressions - Singly Linked Lists - Doubly Linked Lists - Circular Linked Lists - Trees : Representation - Binary Trees : Properties – Representation - Expression Trees – Binary Search Tree : Tree Traversal - Search Structures : AVL Trees – Red-Black Trees - Splay Trees - B Trees

MODULE - II   **15**

Graphs and Sorting: Graphs : Representation - Traversals - Connected Components - Biconnected Components and Articulation Points - Dijkstra's Algorithm - Searching : Sequential and Binary Search - Sorting : Bubble Sort - Selection Sort - Insertion Sort - Quick Sort - Heap Sort - Merge Sort - Hashing: Hash Tables - Hash Functions - Separate Chaining - Open Addressing - Rehashing

MODULE - III   **15**

Algorithm Design Techniques: Complexities: Asymptotic Notations - Algorithm Specifications - Performance Analysis - Divide and Conquer: General Method - Greedy Method - Knapsack Problem - Minimum Cost Spanning Tree - Dynamic Programming: Methods - Optimal Binary Search Tree - Backtracking: 8 Queens Problem - Hamiltonian Cycles - Branch and Bound: Knapsack Problem, Traveling Salesman Problem.

<div align="right">

Lecture:45, Tutorial:15, TOTAL:60

</div>

REFERENCE BOOKS

1. Horowitz. Ellis, Sahni. Sartaj, and Susan -Anderson-Freed, "Fundamentals of Data Structures in C**",** W. H. Freeman & Co. New York, 1992.
2. Levitin. Anany, "Introduction to the Design and Analysis of Algorithms", Pearson Education, New Delhi, 2003.
3. Horowitz. Ellis, Sahni. Sartaj, and Rajasekaran, Sanguthevar, "Fundamental of Computer Algorithms", Golgotia Publication, New Delhi, 2004.
4. Weiss. Mark Allen, "Data Structures and Algorithm Analysis in C", Pearson Education, New Delhi, 2003.

11MC202   OBJECT ORIENTED PROGRAMMING

3   0   0   3

Objective :
- To introduce the concepts of Object oriented programming
- To develop simple applications using C++

MODULE- I   **15**

Object Oriented Programming : Object Oriented Paradigm – Structured Programming Versus Object Oriented Development – Basic Concepts - Arrays and Strings – Functions – Inline Functions – Functions with Default Arguments – References - Classes and Objects – Constructors – Destructors - Array of Objects - Pointers to Objects - this Pointer - Dynamic Allocation Operators - Dynamic Objects - Static Data Members and Static Objects – Objects as Arguments – Returning Objects – Friend Function and Friend Class

MODULE - II   **15**

Polymorphism, Inheritance and Exception Handling : Overloading - Function Overloading - Operator Overloading - Inheritance: Forms of Inheritance - Multilevel Inheritance - Multiple Inheritance - Hierarchical and Hybrid Inheritance - Virtual Functions - Pure Virtual Functions - Exception : Exception Handling Fundamentals - Handling Derived Class Exceptions - Exception Handling Options

MODULE -III   **15**

Templates and Files: Template Functions and Template Classes - Streams**:** Stream Classes – Formatted and Unformatted Data – Manipulators – User Defined Manipulators – File Streams – File Pointer Manipulation – Sequential File Access- Random File Access- Standard Template Library : Overview- Container Class - Vectors- Lists- Maps- Algorithms – String Class

TOTAL:45

REFERENCE BOOKS

1. Schildt. Herbert, "C++: The Complete Reference", Tata McGraw-Hill, New Delhi, 2003.
2. Venugopal, K.R.,Buyya, Rajkumar and Ravishankar, T., "Mastering C++", Tata McGraw-Hill, New Delhi, 1999.
3. Stroustrup, Bjarne, "The C++ Programming Language", Addison Wesley, New York, 2000.
4. Hubbard, John R., "Schaum's Outline Programming with C++", Tata McGraw- Hill, New Delhi, 2003.

11MC203   DATABASE MANAGEMENT SYSTEMS

3   0   0   3

Objective:
- To make the students to learn about database systems and models
- To learn structured query language
- To learn transaction concepts and system architecture

MODULE – I   15
Basic Concepts and ER Model: Introduction – View of Data – Data Independence – Schema and Instance - Database Architecture – Types of Data Model – Entity Relationship Database Design: Overview of the Design Process – ER Model Basic Notions – Extended ER Features - ER Diagrams Banking Application – Case Studies: Design ER Diagram for University - Library - Hospital Management System. - SQL: Creating and Managing Tables with Constraints (DDL, DML, DCL, TCL and Integrity Constraints) – Database Objects (view, synonym, sequence and index).

MODULE - II   15
Relational Model: Introduction – Relational Algebra Operations –Relational Calculus: Tuple and Domain Relational Calculus – Example Queries– Relational Database Design: Features of Good Relational Design – Functional Dependencies – 1NF – 2NF – 3NF – Boyce-Codd – Multivalued Dependencies – 4NF – 5NF - Examples - Query Processing and Optimization: Basic Concepts – Measures of Query Cost – Evaluation of Expressions – Transformation of Relational Expressions – Choice of Evaluation Plans.

MODULE - III   15
Transaction and System Architecture: Transaction: Basic Concept – State – Serializability – Lock Based Protocols – Time Stamp Based Protocols – Deadlock Handling – Failure Classification – Storage Structure – Log Based Recovery – Buffer Management – Data Analysis and Mining: Decision Support Systems-Data Analysis and OLAP-Data Warehousing-Data Mining-Database System Architecture

Total:45

REFERENCE BOOKS
1. Korth. H , Silberschatz. A.and Sudarshan. S., "Database System Concepts", Fifth Edition, Tata McGraw Hill, New Delhi, 2006.
2. Elmasri. R and Navathe. S.B, "Fundamentals of Database Systems", Pearson Education, New Delhi, 2008.
3. Raghu Ramakrishnan, and Gehrke Johannes, "Database Management Systems", Third Edition, Tata McGraw-Hill, New Delhi, 2003.

11MC204   SYSTEM SOFTWARE AND OPERATING SYSTEMS

3   1   0   4

Objective:
- To understand the concept of assemblers, loaders, macro processor and compiler
- To make student understand the various operating system concepts and techniques
- To enrich the knowledge of process, memory and storage management

MODULE – I   15
Introduction to System Software: General Machine Structure - Assembler: General Design Procedure – Design of an Assembler- Macro Processor and Loader: Implementation – Single Pass Algorithm – Two Pass Algorithm - Loader Schemes - Compilers: Phases of the Compiler

MODULE-II   15
Process Management and Synchronization: Introduction – Computer System Organization – Architecture – Operating System Structure – Operations – Distributed – Special Purpose Systems - Operating System Structure : System Calls – Types of System Call – Process: Scheduling – Operations - Inter Process Communication - Thread : Multithreading Models – issues – CPU Scheduling: Scheduling Criteria – Algorithms – Process Synchronization: Critical Section Problem – Peterson's Solution – Semaphores – Bounded Buffer Problem

MODULE - III   15
Memory and Storage Management: Deadlocks: Deadlock Characterization – Methods for handling Deadlocks - Deadlock Prevention – Deadlock Avoidance – Deadlock Detection – Recovery from Deadlocks- Memory Management: Swapping – Contiguous Memory Allocation – Paging – Page table – Segmentation - Virtual Memory : Demand Paging – Page Replacement - Thrashing – File System : Basic Concept – Access Methods – Directory Structure – Allocation Methods – Mass Storage Structure: Disk Structure – Disk Attachment – Disk Scheduling – Disk Management

Lecture:45, Tutorial:15, TOTAL:60

REFERENCE BOOKS
1. Donovan John J., "Systems Programming", McGraw Hill, New York, 2001.
2. Silberschatz. Abraham, Galvin. Peter Baer and Greg Gagne, "Operating System Concepts", Seventh Edition, John Wiley & Sons Pvt. Ltd, New York, 2008.
3. Tanenbaum. Andrew.S, "Modern Operating Systems", Third Edition, Pearson Education, New Delhi,2008
4. Dhamdhere, D.M ,"Systems Programming", Tata McGraw Hill, New Delhi, 2003.

11MC205 COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

<div align="right">3   0   0   3</div>

Objective:

    To provide various statistical and numerical methods for solving scientific, engineering and real world problems.

MODULE - I   **15**

Statistical Methods: Measures of central value: Mean, Median, Mode and Harmonic mean- Measures of dispersion: Variation and Methods of studying variations- Measures of Skewness: Absolute, Relative and Karl Pearson's Coefficient of Skewness-Correlation Analysis: Types of Correlation, Karl Pearson's Coefficient of Correlation Rank Correlation -Regression Analysis: Regression lines and Regression Equations.

MODULE - II   **15**

Numerical Solution of Linear and Non Linear Solution: Solution of Nonlinear Equations: Method of Bisection -Method of False Position – Fixed Point Iterative Method -Newton Raphson Method, Curve Fitting, Method of least squares and their implementation in C, Solution of Linear Equations: Gauss Elimination Method, Gauss Jordan and Gauss Seidel and their implementation in C

MODULE - III   **15**

Interpolation, Numerical Differentiation and Integration: Interpolation with Equal intervals: Finite Difference Operator- Gregory- Newton Forward Interpolation Formula-Gregory- Newton Backward Interpolation Formula- Central Difference Interpolation Formula. Interpolation with Unequal Intervals: Lagrange's Interpolation Formula- Newton's   Divided Difference Formula - Numerical Differentiation and Integration: Newton's   Forward Difference formula- Newton's   Backward Difference formula - Trapezoidal Rule- Simpson's 1/3 Rule -Simpson's 3/8 Rule- Simple programs: Newton Forward and Backward Interpolation Formula - Simpson's 1/3 Rule and 3/8 Rule

<div align="right">**TOTAL : 45**</div>

REFERENCE BOOKS

1. Rajaraman,V "Computer Oriented Numerical Methods", PHI Learning Private Limited, 2009
2. Gupta S P .,"Statistical Methods", Sultan Chand & sons, NewDelhi,2001.
3. Sastry, S.S., "Introductory methods of Numerical Analysis", Fourth Edition, PHI Learning Private Limited, 2009.
4. Rand R.Wilcox, "Fundamentals of Modern Statistical Methods: Substantially Improving Power and Accuracy", Second Edition, Springer Verlag, , 2010

11MC206 DATA STRUCTURES AND ALGORITHMS LABORATORY

0 0 3 1

LIST OF EXPERIMENTS

1. Stack and Queue Operations using Array
2. Programs using Singly Linked, Doubly Linked and Circular List
3. Create a Binary Search Tree and do the following
    i) Insertion and Deletion of a Node
    ii) In order, Pre order and Post Order Traversals
4. Perform the following Operations in a given Graph
    i) Depth First Search
    ii) Breath First Search
5. Search a number in the given list using
    i) Sequential Search
    ii) Binary Search (with and without Recursion)
6. Sort the given List of Numbers using Merge and Quick Sort
7. Construct a Minimum Spanning Tree using Greedy Method
8. Construct Optimal Binary Search Tree using Dynamic Programming
9. Find the Solution of Traveling Sales Person Problem using Branch and Bound Technique
10. Implement Knapsack Problem using Branch & Bound and Greedy Method

11MC207 OBJECT ORIENTED PROGRAMMING LABORATORY

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LIST OF EXPERIMENTS

Using C++

1. Write a program using classes and objects, constructor and destructor
2. Write a program using inline functions, default function arguments
3. Write a program using array of objects
4. Write a program using friend functions and friend class
5. Write a program using function overloading and operator overloading
6. Write a program to count the number of objects created for a class using static member function
7. Write a program using inheritance
8. Write a program using dynamic memory allocation
9. Write a program to implement runtime polymorphism
10. Write a program using function and class templates
11. Write a program using manipulators
12. Write a program using exception handling mechanism
13. Implementation of stream to store and maintain library system, with the features of book issue and book return.
14. Write a program for manipulating string objects
15. Write a program to implement List, vectors and maps

11MC208 DATABASE MANAGEMENT SYSTEMS LABORATORY

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LIST OF EXPERIMENTS

1. Basic SQL SELECT Statements – Creating and managing tables using DDL, DML, Integrity constraints.
2. DCL, TCL and DB Object (View, Sequence, Index, Synonym, Alias) commands
3. Single row Functions (character, mathematical and date functions) and Aggregate functions
4. Displaying Data from Multiple Tables using SQL operators, GROUPBY, HAVING and ORDERBY clause and also perform join operation.
5. Basic PL/SQL programs
6. Functions, Procedures.
7. Exception Handling, Cursors
8. Package, Triggers
9. Develop an application to generate the student mark list using any front end
10. Develop an application to generate the pay roll for employees using any front end.

11MC209   PC HARDWARE & SOFTWARE INSTALLATION   LABORATORY

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LIST OF EXPERIMENTS

1. Study of Hard Disk Drive and partition
2. Operating System Installation
3. Basic Input Output System (BIOS), Configuring BIOS settings
4. Managing device drivers with Device Manager
5. Making Ghost, Backup and restoring of files in hard disk
6. Configuring serial and parallel ports
7. Solving common printer problem
8. Adding plug-and-play components
9. Software and IDE Installation
10. Database Server installation and Configuration

11MC301   COMPUTER NETWORKS

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Objective:
- To understand the concepts of data communications.
- To introduce IEEE standards employed in computer networking.
- To make the students to get familiarized with different protocols and network components.

MODULE – I   **15**

Network Fundamentals: Introduction - Network Models - Physical Layer - Signals - Analog – Digital - Transmission Impairment - Performance – Digital Transmission: Digital to digital conversion – Multiplexing -Transmission Media - Switching – Circuit Switched Networks - Datagram Networks – Virtual circuit Networks

MODULE - II   **15**

Data Link and Network Layer: Error Detection and control –Data Link Control – Multiple Access - Ethernet – Fast Ethernet – Wireless LAN (802.11) – Network Layer: Logical Addressing – Internet Protocol –Address Mapping - Error reporting - Multicasting – ARP – RARP – BOOTP - DHCP – ICMP – IGMP –Delivery - Forwarding and Unicast Routing Protocols

MODULE - III   **15**

Transport and Application Layer: Process to Process Delivery – UDP (User Datagram Protocol) – TCP (Transmission Control Protocol) - Congestion Control - QoS – Techniques to improve QoS - Application Layer **-** Domain Name System – Remote Logging – Email – FTP – WWW and HTTP – Network Management : SNMP - Cryptography – Symmetric Key Cryptography: DES – Asymmetric Key Cryptography :RSA.

<div align="right">**Lecture:45, Tutorial:15, TOTAL:60**</div>

REFERENCE BOOKS

1. Forouzan Behrouz A., "Data communication and Networking", Fourth Edition, Tata McGraw-Hill, New Delhi, 2006.
2. Peterson Larry L. and Davie Bruce S., "Computer Networks: A Systems Approach", Third Edition, Harcourt Asia / Morgan Kaufmann publishers, Singapore, 2003.
3. Tanenbaum Andrew S., "Computer Networks", Fourth Edition, Prentice Hall of India, New Delhi, 2003.

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11MC302   VISUAL PROGRAMMING

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Objective:

- To impart the importance of Windows Programming.
- To guide the pupil to get into deep idea about the basics of Visual Programming.
- To make them learn the advanced concepts in Visual C++.

MODULE – I   **15**

Windows Programming: Introduction -Windows Environment-Windows Programming model-Message Loop-Window Procedure-MFC Library Fundamentals-Application Framework. Introduction to VC++.Net: Visual C++ Components- Application Wizard-Class Wizard- Documents-Views-SDI & MDI Applications-Mouse and Keyboard Processing-Programming the GDI-Device Context-Mapping Modes-GDI Objects: Pen, Font, Brush-Bitmaps.

MODULE - II   **15**

Document View Architecture & Dialog based Applications using controls: Document View Architecture: Menus- Accelerator Keys- Status Bar- Toolbars-ToolTip. Dialog Based Applications: Dialog Basics- Message Box-Modal Dialog-Modeless Dialog-Controls:CEdit-CButton-CListBox-CComboBox-CStatic-CTreeCtrl-ToolTipCtrl-CTabCtrl-CSliderCtrl-CSpinButtonCtrl-CProgressCtrl-RadioButton-Check-ColorDialog-CFontDialog-CFileDialog.

MODULE - III   **15**

Serialization-Splitter Window and Multiple Views .Database Management with ODBC-MFC ODBC Database Classes- CDatabase – CRecordSet - DAO Classes-CDaoDatabase-CDaoQueryDef-CDaoRecordSet-CDaoTableDef-CDaoWorkSpace-ADO Architecture-Programming with ADO-Dynamic Link Library- Regular DLL-Extension DLLs-ActiveX Control.

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TOTAL:45

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REFERENCE BOOKS

1. Petzold Charles.- "Windows Programming", Fifth edition, Microsoft press, London, 1999
2. Kruglinski, David J., Shepherd, George and Wingo, Scot., "Programming Microsoft Visual C++", Fifth Edition, Microsoft press, London, 1998.
3. Archer Tom and Whitechapel Andrew, "Visual C++ .NET Bible", John Wiley & Sons, New York, 2002.
4. Templeman, Julian and Olsen, Andy., "Microsoft Visual C++ .NET Step by Step" Microsoft, Washington, 2003.
5. Gill T. Grandon , "Introduction to Programming Using VISUAL C++ .NET", John Wiley & Sons, New York, 2004.

11MC303   UNIX AND NETWORK PROGRAMMING

3   0   0   3

Objective:
- To understand the basic programming considerations for UNIX Environment
- To learn about process and its communication
- To enrich the students with networking concepts

MODULE – I   15
Introduction and File System: Overview of UNIX OS - File I/O - Files and Directories - Standard I/O library - System Data Files and Information

MODULE - II   15
Process and Communication: Environment of UNIX process - Process Control - Signals – Inter Process Communication: Message Passing (SVR4)- Pipes - FIFO - Message Queues - Semaphores -Shared Memory (SVR4) – Threads- Synchronization- Mutex and Condition variables.

MODULE - III   15
Networking: Transport Layer – Sockets: TCP - UDP – Raw sockets - I/O Multiplexing - Name and Address Conversions - Debugging Techniques - Ping - Trace Route –Client Server Applications : echo, daytime, file transfer and chat

TOTAL:45

REFERENCE BOOKS
1. Stevens, W.Richard,   "Advanced Programming in the UNIX Environment", Second Edition, Pearson Education, New Delhi, 2008.
2. Stevens, W Richard, Fenner, Bill and Rudoff, Andrew M., "Unix Network Programming", Volume I: The Sockets Networking API, Third Edition, Pearson Education, New Delhi, 2005.
3. Gandhi, Meeta., Shetty. Tilak and Shah, Rajiv., "The 'C' Odyssey Unix -The open Boundless C", BPB Publications, New Delhi, 1992.
4. Rosen, Kenneth H., "Unix: Complete Reference", Tata McGraw-Hill, New Delhi, 2001.
5. Kay A. Robbins, Steven Robbins "Unix System Programming, Communication, Concurrency and Threads", Pearson Education, New Delhi 2004.

11MC304   JAVA PROGRAMMING

3   1   0   4

Objective:
- To learn core java concepts
- To introduce the Abstract Window Tool Kit and Socket Programming

MODULE – I   15

Java Basics: Overview of Java - Program Structure - Class - Objects - Methods – Inheritance – Package – Interface – Exception handling – String Handling – Multithreading - Threads - Synchronization - Deadlocks

MODULE- II   15

Packages and AWT: Packages : I/O Packages - Collections : Set - Sorted Set - List - Map - Sorted Map - Enumeration - Vector - Stack - Dictionary - Hash table- Applet – Applications – AWT – Working with Windows, Graphics, Text – Using AWT controls – Layout managers – Menus – Dialog Box – Introduction to Swing

MODULE- III   15

Network programming: Basic network concepts – Inet Address – URL Class - TCP/IP Sockets – UDP Datagrams – Multicast Sockets – JDBC – Java Beans- JNI

Lecture:45, Tutorial:15, TOTAL:60

REFERENCE BOOKS

1.   Schildt, Herbert, "The Complete Reference – Java 2", Fourth Edition, Tata McGraw-Hill, New York, 2001.
2.   Elliotte Rusty Harold, "Java Network Programming", 2nd Edition, O'Reilly, 2004
3.   Naughton., "The Complete Reference – Java 2", Third Edition, Tata McGraw-Hill, New Delhi, 1999
4.   Kathy Sierra, Bert Bates, "Head First Java", 2nd Edition, O'Reilly, 2005

11MC305 SOFTWARE ENGINEERING

3   0   0   3

Objective:
- To develop the applications using software development life cycle process
- To learn the testing process and techniques
- To know about cost estimation and management during development

MODULE – I   15
Software Process and Requirements: Introduction – Capability Maturity Model Integration - Assessment – Personal and Team Process – Process Models: Water Fall Model – Incremental Process Model – Evolutionary Process Model – Spiral Model – Component Based Development Model – Pre Project – Unified Process – Agile Process - Software Engineering Practice – Planning – Construction – Deployment – System Engineering : Computer Based Systems – Hierarchy – Modeling and Simulation – WBS Method - Requirements Engineering Process : Stakeholders – Multiple Viewpoints – Elicitation – Analysis Model – Negotiation – Modeling Approaches.

MODULE - II   15
Design Concepts and Testing: Design Process and Concepts – Modularity – Refinement and Refactoring – Design Classes and Model – Architectural Design : Software Architecture - Data Design – Archetypes – Trade- Off Analysis – Complexity – Transform Flow – Transaction Flow - Mapping – Cohesion – Coupling – User Interface Design : Analysis and Design Steps - Strategic Approaches – Testing: Module – Integration – System - Recovery – Security and Stress – Performance - Debugging – Verification and Validation - Black Box – White Box testing – Flow Graph Notation – Matrices – Data Flow Testing – Equivalence Partitioning – Boundary value Analysis.

MODULE - III   15
Software Project Management: Managing People – Stakeholders – Team – Decomposition - Groups - Measures and measurements – Measuring Quality – Metrics Integration – Cost Estimation – Reusable Resources – Problem Based Estimation – Use Cases – Empirical Estimation - COCOMO model – Quality and Configuration Management – Management Planning – Change – Release Management - Case Study: Open Source Technologies.

TOTAL:45

REFERENCE BOOKS
1. Pressman. Roger S., "Software Engineering - A Practitioner's Approach", Sixth Edition, Tata McGraw-Hill, New York, 2005.
2. Sommerville. Ian, "Software Engineering", Seventh Edition, Pearson Education Asia, Singapore, 2008.
3. Jalote. Pankaj, "An Integrated Approach to Software Engineering", Narosa Publishing House, New Delhi, 2008.
4. Peters. James F and Pedryez. Witold, "Software Engineering: An Engineering Approach", John Wiley & Sons, New Delhi, 2008.

11MC306 VISUAL PROGRAMMING LABORATORY

0   0   3   1

LIST OF EXPERIMENTS

1. Creating Applications using GDI Objects.
2. Create an application with animation using bitmap
3. Creating an application using Keyboard Events.
4. Creating an application using Mouse Events
5. Create a dialog based application using controls.
6. Design a calculator using Dialog controls.
7. Implement serialization using document view architecture with CView as base class.
8. Create a SDI application using the base class CEditView
9. Create an MDI application using the base class CRichEditView.
10. Create an application using toolbar and status bar
11. Application to create DLL and implementing DLL
12. Implement internet application using internet controls.
13. Create a Database applications using ODBC connectivity.
14. Create a Database applications using DAO.
15. Create an application using ActiveX control.

11MC307   UNIX AND NETWORK PROGRAMMING LABORATORY

                                      0   0   3   1

LIST OF EXPERIMENTS

1. Program using File I/O system calls (create, open, read, write, lseek, close and fcntl)
2. Program using stat functions, Set-User-ID, hard links, soft links, and directory functions.
3. Program using time related functions
4. Program using fork, vfork, wait and waitpid functions
5. Program using exec functions.
6. Program to handle signals using signal, sigprocmask, sigpending and sigsuspend functions.
7. Program to implement inter- process communication using pipes, FIFO
8. Program to implement inter- process communication using message queues and shared memory
9. Program to perform synchronization using semaphores.
10. Program using threads synchronization using mutex
11. File transfer Program using TCP and UDP sockets
12. Echo client – server Program using TCP and UDP sockets
13. Chat Program using TCP and UDP sockets (Client and Server).
14. Write a C Program to capture packets in a network using sniffer.
15. Program to download WebPages using Uniform Resource Locator (URL) class.

REFERENCES / MANUALS/SOFTWARE
UNIX man or help commands.

11MC308   JAVA PROGRAMMING LABORATORY

0   0   3   1

LIST OF EXPERIMENTS

1. Develop a bank application using class, object, Overloading and Overriding
2. Develop a student application using interface and Packages.
3. Program to implement Inheritance
4. Program to illustrate Exception Handling in Java and print the stack trace.
5. Program to illustrate the working principle of Java Threads.
6. Program to illustrate the Inter Process Communication using Thread
7. Programs to demonstrate the use of components: Text fields, buttons, Scrollbar, Choice, List and Check box.
8. Programs to demonstrate the use of various Layout Managers
9. Program to create simple text editor using Applets
10. Program using JDBC
11. Develop a application using Applet with backend
12. Program for creating File transfer with TCP Sockets
13. Program for creating simple chat application with UDP Sockets
14. Program to illustrate java beans
15. Program to illustrate JNI

11MC309   MULTIMEDIA LABORATORY

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LIST OF EXPERIMENTS

1. Edit the images using Adobe Photoshop.
2. Design a greeting and visiting card using Photoshop.
3. Edit a black and white photo to color photo.
4. Create a lava effect using gradient and layer behavior.
5. Create a different level of effects filters.
6. Create a Gallery using Photoshop.
7. Design a website using Photoshop.
8. Create different types of animation using flash.
9. Create an effective buttons in flash.
10. Create a game using flash script.
11. Creation of movies using Flash.
12. Design a movie using action script in Flash.

REFERENCES / MANUALS/SOFTWARE
Macromedia Flash
Adobe Photoshop

11MC401   OBJECT ORIENTED ANALYSIS AND DESIGN

                  3   0   2   4

Objective:

- To understand the Object Oriented life cycle
- To identify objects, relationships, services and attributes through UML
- To understand the Use-Case Diagrams and Object Oriented Design process
- To know about Software Quality and Usability

MODULE – I   15

Introduction and Object Oriented Methodologies: An Overview of Object Oriented Systems Development – Object Basics – Object Oriented Systems Development Life Cycle - Methodologies: Rumbaugh, Booch and Jacobson Methodology – Patterns – Frameworks – Unified Approach – Unified Modeling Language : UML Diagrams

MODULE - II   15

Object Oriented Analysis and Design: Object Oriented Analysis **:** Use Case Models - Object Analysis - Identifying Object relationship, Attributes and Methods – Object Oriented Design **:** Design processes - Design axioms – Design Rules - Designing Classes – Access Layer : Object Storage – Access Control – Distributed Databases – Distributed Object Computing - Object relational systems – View Layer : Designing View Layer Classes – Purpose of View Layer Interface

MODULE - III   15

Software Quality and Usability: Software Quality Assurance – Testing Strategies - Object Orientation on Testing - Test Cases - Test Plans - Continuous Testing - Debugging Principles – Usability Testing - Measuring User Satisfaction - Case Study: Net Banking - Bank ATM System

                                                     Lecture:45, Practical:15, TOTAL:60

REFERENCE BOOKS

1. Bahrami, Ali., "Object Oriented Systems Development", Tata McGraw-Hill, New Delhi, 1998.
2. Fowler, Martin., "UML Distilled", Second Edition, PHI/Pearson Education, New Delhi, 2002
3. Booch Grady, Rumbaugh James, and Jacobson Ivar., "The Unified Modeling Language User Guide", Pearson Education, New Delhi.
4. Larman Craig., "Appling UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process", Pearson Education, New Delhi.

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11MC402   ENTERPRISE COMPUTING

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Objective:

- To explore the various high end computing facilities available for an Enterprise.

MODULE – I   **15**

J2EE Architecture: J2EE Technologies - Directory Services and JNDI – LDAP - RMI Architecture - Locating RMI Objects - RMI Exceptions - Security Manager - Parameter Passing- Garbage Collector- Dynamically Loading Classes - Remote Callbacks - Object Activation - RMI over IIOP - RMI – IIOP and JavaIDL

MODULE - II   **15**

EJB: Overview of Enterprise JavaBeans – Creating a Session Bean – Creating a Entity Bean – Bean and Container Manager Persistence – Message Driven Bean- EJB Transactions

MODULE - III   **15**

CORBA Introduction: Introduction to CORBA - CORBA Architecture- Interface Definition Language (IDL)- Building a CORBA Application - CORBA Services and CORBA Facilities - CORBA Standard Exceptions - Introduction to COM

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TOTAL:45

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REFERENCE BOOKS

1. Subramanyam Allamaraju, Cedric Buest "Professional Java Server Programming J2EE Edition", APress, 2007
2. Ed Roman, Scott W.Ambler, Tyler Jewell, "Mastering Enterprise Java Beans", 2nd Edition, John Wiley & Sons Inc.,2004
3. Jearmy Roseberge, "Teach yourself CORBA in 14 Days" Techmedia, 2000
4. Dale Rogerson,"Inside COM", Microsoft Press,1997
5. Mark Wutka, "Special Edition Using Java 2 Enterprise Edition (J2EE): With JSP, Servlets, EJB 2.0, JNDI, JMS, JDBC, CORBA, XML and RMI", QUE Publishing, 2001

11MC403   WEB TECHNOLOGY

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Objective:
- To understand World Wide Web and their standards
- To do web publishing dynamically through client side scripting
- To understand a server side scripting through Servlet and JSP's

MODULE – I   15

Client/Server concepts : World Wide Web – components of web application – MIME types, browsers and web servers – Types of web content – URL – HTML – HTTP protocol – Web applications – performance – Application servers – Web security. User Experience Design – Basic UX terminology – UXD in SDLC – Rapid prototyping in Requirements

MODULE - II   15

Client Tier : Basic HTML tags – Look and feel using CSS – Client side scripting using Java Script and Validations - Document Object Model (DOM) -Business tier using POJO (Plain Old Java Objects) – Introduction to Frameworks – Introduction to POJO – Java Database Connectivity (JDBC)

MODULE - III   15

Presentation tier using JSP: – Role of Java EE in Enterprise applications – Servlet Basics -Servlet Architecture - Servlet and HTML -Servlet sessions - Servlet and Java Mail - Server side programming with JSP - JSP Architecture – Directives - Standard Actions - Implicit Objects – Handling JSP Errors - Custom tag libraries

<div align="right">**TOTAL:45**</div>

REFERENCE BOOKS
1. Douglas E Comer, Internet Book, The: Everything You Need to Know About Computer Networking and How the Internet Works, 4/E, Prentice Hall, 2007
2. Deitel, H M., Deitel, P J and Nieto, T R., "Internet and World Wide Web – How to Program", Pearson Education, New Delhi, 2007
3. James Goodwill ,"Developing Java Servlets", Sams Publisher, Second Edition,2001
4. Avedal, Karl, Ayers, Danny., Briggs, Timothy., and Nakhimovsky, Alexander., "Professional JSP: Using JavaServer Pages, Servlets,EJB, JNDI, JDBC, XML, XSLT, and WML", Shroff Publishers & Distributors, Mumbai, 2007
5. Jeffrey C. Jackson, Web Technologies: A Computer Science Perspective, Prentice Hall, 2007

11MC404   ENTERPRISE COMPUTING LABORATORY

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LIST OF EXPERIMENTS

1. Create a distributed application to download various files from various servers using RMI
2. Create a distributed chat application using RMI
3. Create a Java Bean to draw various graphical shapes and display it using BDK
4. Develop an Enterprise Java Bean to illustrate stateful session bean
5. Develop an enterprise Java Bean to illustrate stateless session bean
6. Develop an Enterprise Java Bean to illustrate CMP entity bean
7. Develop an Enterprise Java Bean to illustrate BMP entity bean
8. Design and implement an online Bookstore, using session and entity enterprise beans for the backend and servlets for the UI.
9. Develop a middleware component for retrieving Stock Market Exchange information using CORBA
10. Develop a middleware component for retrieving Weather Forecast information using CORBA

11MC405   WEB TECHNOLOGY LABORATORY

0   0   3   1

LIST OF EXPERIMENTS

1. Design a web page using text formatting, List, Image, table and anchor tags.
2. Design a form to read student details using form elements.
3. Create a web page with the following.
    i) Cascading style sheets.
    ii) Use your college information for the web pages Using Frames
4. Write a Java Script to perform object (Ex Math) and Regular Expression.
5. Write a Java Script to perform the Client Side validation.
6. Write a Java program to illustrate Servlets.
7. Write a Java program to illustrate session tracking in Servlet
8. Write a JSP program to invoke a Servlet
9. Write a JSP to demonstrate Session Handling
10. Write a JSP to implement the Error Handling.
11. Write a JSP to retrieve information from a database using JDBC.
12. Develop a Web portal.

11MC406   OPEN SOURCE SYSTEMS LABORATORY

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LIST OF EXPERIMENTS

1. Linux OS installation –Hardware Detection, configuring disk partitions and file systems
2. Installing software from source code as well as using binary packages
3. Configuring FTP server
4. Configuring Apache web server
5. Configuring Mail server
6. Configuring PostgreSQL database
7. Simple programs using PHP
8. Program for database connectivity using PHP and MySQL
9. Simple programs using Python
10. Program for database connectivity using Python and MySQL

REFERENCES

1. Terry Collings, Kurt Wall, "Red Hat Linux Network and System Administration" 3rd edition wiley.
2. Nemeth,"Linux Administration Handbook", 2nd Edition, Pearson Education
3. http://ramanchennai.wordpress.com/2010/11/21/an-introduction-to-perl-language-be-cse-students/

11MC501 SOFTWARE PROJECT MANAGEMENT

3   0   0   3

Objective:

- To give students a hands-on guide to the non-deterministic but leading edge task of managing software development projects.

MODULE – I   **15**

Introduction to Software Project Management: Competencies - Product Development Life Cycle - Software Development Process and models - The SEI CMM - International Organization for Standardization - Managing Domain Processes - Project Selection Models - Financial Processes - Selecting a Project Team - Goal and Scope of the Software Project

MODULE - II   **15**

Project Planning : Creating the Work Breakdown Structure - Approaches to Building a WBS - Project Milestones - Building a WBS for Software – Identifying the Tasks and Activities - Software Size and Reuse Estimating - Problems and Risks - Cost Estimation - Effort Measures - COCOMO: A Regression Model - COCOMO II - SLIM: A Mathematical Model

MODULE - III   **15**

Organizational Planning : Project Roles and Skills Needed - Project Management Resource Activities – Characteristics of an Organization – Organizational Structures - Scheduling Fundamentals - PERT and CPM - Leveling Resource Assignments - Map the Schedule to a Real Calendar – Software Quality Assurance – Building the Software Quality Assurance Plan – Ensuring the SQAP - - Software Configuration Management: Principles - Requirements - Planning and Organizing - Tools - Benefits - Legal Issues in Software

TOTAL:45

REFERENCE BOOKS

1. Futrell, Robert T., Shafer, Donald F and Safer, Linda I., "Quality Software Project Management", Pearson Education Asia, Singapore, 2002.
2. Jalote, Pankaj, "Software Project Management in Practice", Addison Wesley, New York, 2002.
3. Software Engineering Institute web reference :
   http://www.sei.cmu.edu/library/abstracts/reports/89cm021.cfm

11MC502   XML AND WEB SERVICES

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Objective:
- To know the methodology and implementation of Web Services
- To learn the concepts of XML and Web services security

MODULE – I   **15**
Introduction to XML :Introduction – Revolutions of XML - XML Basics   – Defining XML
Documents: DTD- XML schema- Name spaces -XFiles: XLink - XPointer - XPath - XML with XSL-
XSL-FO - Parsing XML using DOM – SAX- Integrating XML with database - Formatting XML on
the Web

MODULE - II   **15**
Web Services: Introduction -Web Service Standards– Web Service Architecture – SOAP- WSDL-
UDDI– Conversations – Web Services Conversation Language – WSCL interface component –
Relationship between WSCL and WSDL -Work Flow – Business Process Execution language

MODULE - III   **15**
Implementation of Web Services : Web Services implementation using Java Developer Package -
Web Service Implementation using .NET- QoS : Introduction - QoS in web Services -Design pattern
QoS - Enabled Web Services – QoS Enabled Application - XML in E-Business - Wireless and Voice
Services with XML

TOTAL:45

REFERENCE BOOKS
1. Ron Schmelzer, Travis Vandersypen,Jason Bloomberg, Madhu Siddalingaiah, Sam hunting,
   Michael D. Qualls, David Houlding, Chad Darby, Diane Kennedy , " XML and Web Services",
   sams , Feburary 2002.
2. Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services: An Architects
   Guide", Prentice Hall, Nov 2003
3. Ramesh Nagappan, "Developing Java Web Services: Architecting and Developing Secure Web
   Services Using Java", John Wiley and Sons, First Edition Feb 2003
4. Keith Ballinger, "NET Web services: Architecture and Implementation with **.**Net", Pearson
   Education, First Education Feb 2003
5. Eric A Marks and Mark J Werrell, "Executive Guide to Web services", John Wiley and sons,
   March 2003
6. Anne Thomas Manes, "Web Services: A managers Guide" Addison Wesley, June 2003

11MC503   SOFTWARE TESTING

                                                        3   0   0   3

Objective:
- To learn the concepts of software quality assurance and testing process
- To know about various testing types and levels of testing
- To expertise in the most widely used testing tools

MODULE – I   15
Functional Testing: Principles of Testing – SDLC Models – Quality Control and Assurance – Verification and Validation – Types of Testing: White Box Testing – Black Box Testing - Levels of Testing: Unit Testing – Integration and System Testing – Functional and Non-Functional Testing - Acceptance Testing - Testing Phases.

MODULE - II   15
Performance Testing: Introduction to Performance Testing – Methodology – Process for Performance Testing – Tools for Performance Testing - Regression Testing – Internationalization Testing – Ad hoc Testing – Buddy Testing – Agile and Extreme Testing – Defect Seeding –Usability and Accessibility Testing – Aesthetics Testing – Accessibility Testing – Tools for Usability.

MODULE - III   15
Organizational Issues and Applications: Testing Team and Development Team – Test Planning – Management – Test Automation - Execution – Reporting – Software Testing Tools: An Overview – Testing of web-based applications – Testing of embedded software systems in Aerospace applications – Testing applications for security.

                                                                    TOTAL:45

REFERENCE BOOKS
1. Srinivasan, Desikan and Gopalaswamy, Ramesh., "Software Testing – Principles and Practices", Pearson Education, New Delhi, 2006
2. Renu Rajani and Pradeep Oak, "Software Testing – Effective Methods, Tools and Techniques", Tata McGraw Hill, New Delhi, 2006
3. Prasad, K.V.K.K., "Software Testing Tools", Dreamtech press, New Delhi, 2005
4. Perry, William E., "Effective Methods for Software Testing", Second Edition, John Wiley & Sons, New York, 2006.

11MC504   XML AND WEB SERVICES LABORATORY
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LIST OF EXPERIMENTS

1. Create an XML document to store information about books and validate document using DTD
2. Create an XML document to store information about books and validate document using SCHEMA
3. Present the book's XML document using cascading style sheets (CSS).
4. Illustrate use of XPATH and present XML document using XSLT
5. Write an XSLT program to extract book titles, authors, publications, book rating From the book's XML document and use formatting.
6. Use DOM and SAX to navigate and extract information from the book's XML Document.
7. Use Microsoft DSO to connect HTML form or VB form to the book's XML document and display the information
8. Create a web service for temperature conversion with appropriate client program.
9. Create a web service for currency conversion (at five currencies) with appropriate Client program.
10. Consuming a Simple web Service call
11. Create a sample Rest based web services

11MC505   SOFTWARE TESTING LABORATORY

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LIST OF EXPERIMENTS

1. Recording test in analog and context sensitive mode
2. Checking GUI Objects
3. Checking tables
4. Checking Bitmap Objects
5. Creating data driven test
6. Running and Analyzing a Test with Regular Expressions
7. Maintaining test script
8. Results Formatting
9. User Defined functions
10. Recovery Scenarios

REFERENCE
Use Tools like   QuickTest Professional , Win Runner, Load Runner, JUNIT

11MC011   MOBILE COMPUTING

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Objective:

- To make the student's understand the basic concepts of mobile computing
- To enhance them with the various communication strategies

MODULE – I   15
Wireless Communication Fundamentals: Wireless Transmission – Frequencies for radio transmission- Signals – Antennas - Signal Propagation – Multiplexing - Modulation – Spread Spectrum – Cellular System - Medium Access Control - Motivation for Specialized MAC- SDMA - FDMA - TDMA – CDMA - Comparison of Access Mechanisms

MODULE - II   15
Communication Systems and Wireless Networks: Tele Communications - GSM- DECT-TETRA – UMTS – IMT 2000 – Satellite Systems – basics – Routing - Localization-Handover - Broadcast Systems - Overview – Cyclic Repetition of Data – DAB - DVB - Wireless LAN - Infrared Vs Radio Transmission – Infrastructure Networks - Adhoc Networks - IEEE 802.11 – HIPERLAN – Bluetooth

MODULE - III   15
Mobile Network Layer and WAP: Mobile IP - Goals – Assumptions and Requirement – Entities – IP packet Delivery -Agent Advertisement and Discovery – Registration – Tunneling and Encapsulation – Optimization – Reverse Tunneling – IPv6 – DHCP - Adhoc Networks - WAP: Architecture – Datagram Protocol - Transport Layer Security - Transaction Protocol - Session Protocol - Application Environment - Wireless Telephony Application

TOTAL:45

REFERENCE BOOKS
1. Schiller, J., "Mobile Communication", Second Edition, Pearson Education, New Delhi, 2009.
2. Stallings, William, "Wireless Communication and Networks", Prentice Hall of India, New Delhi, 2007.
3. Singhal, "WAP-Wireless Application Protocol", Pearson Education, New Delhi, 2003.
4. Hansmann, Uwe., Merk, Lothar, Nicklons, Martin. S. and Stober, Thomas, "Principles of Mobile Computing", C Springer India Pvt Ltd, Berlin, 2008.

11MC012   DISTRIBUTED COMPUTING

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Objective:
- To introduce the principles of distributed systems
- To develop abstract models for understanding process interaction, failure and security
- To understand the issues related to timing, coordination and distributed transactions

MODULE – I   **15**

Introduction: Characterization of Distributed Systems – System Models – Architectural and Fundamental Models - Networking and Internetworking – Types – Network Principles – Internet Protocols - Interprocess Communication – Distributed Objects and Remote Invocation – Introduction – Communication between Distributed Objects – RPC – Events and Notification.

MODULE - II   **15**

Operating System Issues: Operating System Support – Introduction – Layer – Protection – Process and Threads – Communication and Invocation – Architecture - Security – Overview – Cryptographic Algorithms – Digital Signatures – Cryptography Pragmatics - Distributed File System – Introduction – Architecture – Name Services – Peer to Peer Systems.

MODULE - III   **15**

Distributed Transaction Processing: Time and Global States – Coordination and Agreement – Introduction – Mutual Exclusion – Elections – Multicast Communication – Consensus - Transaction and Concurrency Control – Transactions – Nested Transactions- Locks – Concurrency control – Timestamp Ordering Comparisons - Distributed Transactions – Flat and Nested – Atomic commit protocols – concurrency control – Distributed Deadlocks – Transaction recovery.

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REFERENCE BOOKS
1. Coulouris George, Dollimore Jean and Kindberg Tim, "Distributed Systems Concepts and Design", 4th Edition, Pearson Education, New Delhi, 2008.
2. Tanenbaum Andrew S, Maartenvan Steen, "Distibuted Systems–Principles and Pardigms", Pearson Education, 2004
3. Liu M.L., "Distributed Computing Principles and Applications", Pearson Education, 2004.

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11MC013 NETWORK ADMINISTRATION

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Objective:
- To understand the concepts of Network Administration Fundamentals.
- To introduce Architectures employed in computer networking.
- To make the students to get familiarized with trouble shooting and security

MODULE – I   **15**
Network and System Administration : Introduction - Challenges of System Administration - System Components - Networked Communities - Host Management - User Management - Models of Network and System Administration - Configuration and Maintenance.

MODULE - II   **15**
Network Services and Security: Diagnostics - Fault - Change Management - Application Level Services - Network Level Services - Principles of Security - Security Implementation - Analytical System Administration.

MODULE - III   **15**
Linux Administration: File system - Adding New Users - Adding a Disk - Periodic Processes - Backups - Syslog and Log files - Software and Configuration Management.

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REFERENCE BOOKS
1. Thomas A. Limoncelli, Christina J. Hogan, and Strata R. Chalup "Practice of System and Network Administration", 2nd Edition, 2007.
2. Evi Nemeth, Garth Snyder, and Trent R. Hein "Linux Administration Handbook", 2nd Edition, 2006.
3. Craig Hunt "TCP/IP Network Administration", 3rd Edition, O'Reilly
4. Mark Burgess "Principles of Network and System Administration", Pearson Education, 2004

11MC014 CRYPTOGRAPHY AND NETWORK SECURITY

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Objective:
- To understand private and public key encryption techniques
- To learn various security algorithms
- To gain knowledge on network security and its applications

MODULE – I   15

Introduction and Symmetric Ciphers: Overview - Classical Encryption Techniques – Cipher Principles – Data Encryption Standard – Block Cipher - Design Principles and Modes of Operation - Evaluation Criteria for AES – AES Cipher – Triple DES – encryption Function – Traffic Confidentiality

MODULE - II   15

Public Key Encryption and Hash Functions: Key Management - Diffie-Hellman key Exchange – Elliptic Curve Architecture and Cryptography - Confidentiality using Symmetric Encryption – Public Key Cryptography and RSA - Authentication Requirements –Authentication Functions – Message Authentication Codes – Hash Functions: Security of Hash Functions and MACs – MD5 message Digest algorithm - Secure Hash Algorithm – RIPEMD – HMAC Digital Signatures – Authentication Protocols – Digital Signature Standard

MODULE - III   15

Network Security: Authentication Applications: Kerberos – X.509 Authentication Service – Electronic Mail Security – PGP – S/MIME - IP Security – Web Security-Intrusion Detection – Password Management – Viruses and Related Threats – Virus Counter measures – Firewall Design Principles – Trusted Systems

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REFERENCE BOOKS
1. Stallings William, "Cryptography And Network Security – Principles and Practices", Fourth Edition, Prentice Hall of India, New Delhi, 2006.
2. Kahate Atul, "Cryptography and Network Security", Tata McGraw-Hill, New Delhi, 2003.
3. Schneier Bruce, "Applied Cryptography", Second Edition, John Wiley & Sons Inc, New York, 1996.
4. Pfleeger Charles B and Pfleeger, Shari Lawrence., "Security in Computing", Third Edition, Pearson Education, New Delhi, 2003.

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11MC015   TCP/IP PROTOCOL SUITE

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Objective:
- To provide basic knowledge of functional area of TCP/IP Protocol Suite.
- To familiarize the students with various Standards and Protocols of TCP/IP Protocol suite and emphasize the various layers and devices used in data transmission.

MODULE – I   **15**

Introduction and Internet Protocol :History – Standards –Models — Addressing – Versions – Local Area Networks – Wide Area Networks – Connecting devices - IP addresses – Classful Addressing – Subnetting and Supernetting – Delivery – Routing – Routing table – Datagram – Fragmentation – Options – Checksum – IP Package – ARP – RARP.

MODULE – II   **15**

Transmission Control Protocol :Internet Control Message Protocol – Messages – ICMP Packages – UDP Operation – Use of UDP – UDP Package – TCP Services – Features – Segment – Connection – Transition diagram – Flow Control – Error Control – Congestion Control – TCP Timers & Package.

MODULE – III   **15**

Application Layer and Protocols :BOOTP – DHCP – DNS– TELNET -File Transfer Protocol — Simple Mail Transfer Protocol -MAA – POP & IMAP – World Wide Web – Architecture – Web Documents – HTTP Transaction

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REFERENCE BOOKS
1 Forouzan, Behrouz A., "TCP/IP Protocol Suite", Third Edition, Tata McGraw-Hill, New Delhi, 2005.
2 Comer, Douglas E., "Internetworking with TCP/IP", Fifth Edition, Prentice-Hall of India, New Delhi, 2007.
3 Comer, Douglas E and Stevens David L., "Internetworking with TCP/IP", Second Edition, Volume I, II and III, Prentice-Hall of India, New Delhi, 1994

11MC016   PARALLEL PROGRAMMING

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Objective:
- To introduce Methodologies and Techniques of Parallel Computers
- To Learn more about Interconnection Networks and shared memory

MODULE – I   15
Parallel Computers: Demand for Computational speed – Types of parallel computers – Architectural features of Multicomputers – Networked computers – Increased Computational Speed - Message Passing Computing: Basics – Workstation Clusters – Evaluating – Debugging - Partitioning - Divide-and-Conquer Strategies - Floyd's Algorithm – Monte–Carlo Methods – Performance Analysis

MODULE - II   15
Computation Methods: Pipelined Technique – Computing Platform for Pipelined Applications – Pipeline Examples – Synchronization Computations – Synchronization Examples - Load Balancing – Dynamic Load Balancing - Distributed Termination Detection – Programming with Shared Memory – Sharing Data - Examples
.
MODULE - III   15
Algorithms and Applications: Sorting Algorithms – General – Compare and Exchange Sorting Algorithms - Numerical – Matrices – Implementing Matrix Multiplication – Linear Equations – Iterative methods - Image Processing – Searching and Optimization - Point processing – Histogram – Smoothing, Sharpening and Noise reduction - Edge Deduction – Application and Techniques – Branch and Bound – Genetic Algorithm – Hill Climbing

TOTAL:45

REFERENCE BOOKS
1. Barry Wilkinson, Michael Allen, "Parallel Programming – Techniques and applications using Networked Workstations and Parallel computers", Prentice Hall, 2003
2. Shameem Akhter, Jason Roberts, "Multicore Programming – Increasing Performance through Software Multithreading", Intel Press, 2006.
3. Michael J. Quinn, "Parallel Programming in C with MPI and openMP", McGrawHill, 2003.

<center>**11MC021   RESOURCE MANAGEMENT TECHNIQUES**</center>

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Objective:
- To learn organizational principles and practice of Operation Research approach to management problems
- To formalize case studies in conceptual, algorithmic and mathematical models

MODULE – I   **15**
Linear Programming Models: Mathematical Formulation–Graphical Solution of Linear Programming Models-Simplex Method-Artificial Variable Techniques-Variants of Simplex Method - Transportation and Assignment Models: Introduction – Methods of basic Feasible Solution - Optimality Test - Degeneracy in Transportation Problem - Unbalanced Transportation Problem - Hungarian Method for Assignment Problem - Traveling Salesman Problem.

MODULE - II   **15**
Integer Programming and Queuing Models: Formulation - Gomory's IPP method -Gomory's Mixed Integer Method - Branch and Bound Technique - Queuing Theory: Characteristics of Queuing Models - Poisson Queues - (M/M/1): (FCFS /∞ /∞) - (M/M/1): (FCFS/N/∞) - (M/M/C):(FCFS/∞/∞) - (M/M/C):(FCFS/N/∞) Models

MODULE - III   **15**
Project Management by PERT/CPM: Introduction - Basic steps in PERT/CPM techniques - Network Diagram Presentation - Rules of Drawing Network Diagram - Fulkerson's rule - Time Estimates and Critical Path in Network Analysis - Project Evaluation and Review Technique: Simulation: Introduction - Monte-Carlo Simulation - Application to Queuing Problems

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REFERENCE BOOKS
1.   Taha H.A ., "Operations Research : An Introduction", Eighth Edition, Pearson Education, 2008.
2.   Natarajan A.M, Balasubramanie P., and Tamilarasi A., "Operations Research", Pearson education, New Delhi, 2005.
3.   Kanthi Swarup, Gupta P.K., and Manmohan, "Operations Research" S. Chand & Company, New Delhi,
4.   Gupta Prem Kumar and Hira D.S., "Operations Research", Third edition, S. Chand & Company Ltd, New Delhi, 2003.
5.   Hillier, F. S. and Lieberman, G. J "Introduction to Operations Research", Seventh edition McGraw-Hill Science/Engineering/Math; (March 22, 2002)

11MC022   COMPUTER GRAPHICS

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Objective:
- To learn the fundamentals of graphics system
- To familiarize them with the Transformations
- To make them analyze the animation technology

MODULE – I   15
Introduction: Overview of Graphics Systems: Video Display Devices - Random scan systems - Raster Scan Systems - Graphics Software-Output Primitives - Line Drawing Algorithms – DDA - Bresenham – Circle Drawing Algorithms – Ellipse Generating Algorithms.

MODULE - II   15
2D Transformations: Basic transformations – 2D viewing – Viewing Pipeline – Window – View Port Coordinate Transformation – 2D Viewing Functions - Clipping Operations – Line Clipping – Cohen Sutherland – Liang-Barsky Text Clipping – Interactive Input Methods - Input of Graphical Data - Interactive Picture Construction Techniques.

MODULE - III   15
3D Transformations: 3D Basic Transformation – 3D Object Representation –Polygon Surfaces - Spline Representation - Bezier Curves – 3D viewing: Projections - Color Models: XYZ – CIE – RGB – CMY - HSV-Animation: Design of Animation Sequences – Morphing

TOTAL:45

REFERENCE BOOKS
1. Hearn, Donald, M. and Baker, Pauline., "Computer Graphics C version", Second Edition, Pearson Education, New Delhi, 2004.
2. Foley, Van Dam and Feiner, Hughes, "Computer Graphics: Principles & Practice in C", Second Edition, Pearson Education, New Delhi, 2005.

11MC023   MICROPROCESSORS

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Objective:
- To enable the students to understand the basic concepts of Microprocessor
- To give an exposure to 8 bit Microcontroller with different interfacing techniques

MODULE – I   **15**

Introduction: Introduction: Microprocessors – 8085 - Functional Block Diagram - Registers -ALU - Bus Systems – Instruction Set - Addressing Modes – Counters: Time and Delays - Hexadecimal Counters - Stacks and Subroutines Execution.

MODULE-II   **15**

Memory and I/O Interfacing: Memory Interfacing: Memory Read and Write Cycle - Memory Mapped I/O - I/O Mapped I/O - I/O Interfacing: Serial I/O - 8255 - Parallel I/O - 8279 Keyboard Display Controller - Interrupts: 8085 Interrupt - 8085 Vectored Interrupt.

MODULE- III   **15**

8051 Microcontroller and Programming: Introduction to Micro controller: Functional block diagram - Instruction set - Addressing modes - I/O Pins - Ports and Circuits - Counters and Timers - Modes of Operation - Serial Data Communication I/O - Interrupts: Interfacing to External Memory - Instruction Sets - I/O Port Programming - Timer and Counter Programming.

TOTAL : 45

REFERENCE BOOKS
1. Gaonkar, Ramesh .S, "Microprocessor Architecture, Programming and application with 8085", 4th Edition, Penram International Publishing, New Delhi, 2007 Re print.
2. Mohammed Ali Mazidi and Janice Gillispie Mazidi, "The 8051 Microcontroller and Embedded Systems", Pearson Education Asia, New Delhi, 2007.
3. Douglas Hall .V. "Microprocessors and Interfacing Programming and Hardware", Tata McGraw- Hill, 1995**.**
4. Ayala, Kenneth. J., "The 8051 Microcontroller Architecture Programming and Application", 2nd Edition, Penram International Publishers (India), New Delhi, 1996.

11MC024   COMPILER DESIGN

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Objective:
- To understand, design and implement a lexical analyzer and parser
- To understand, design code generation schemes.
- To understand optimization of codes and runtime environment

MODULE – I   15
Translators : Compilation and Interpretation-The phases of Compiler-Errors encountered in different phases-The grouping of phases-Compiler construction tools - A simple one-pass compiler-Language design-Programming language grammars-Derivation-Reduction and Ambiguity-Lexical Analysis: Need and role of lexical analyzer-Input Buffering-Lexical errors-Expressing tokens by Regular Expression - Finite Automata-Converting regular expression to NFA - Converting NFA to DFA-Minimization of DFA - Language for specifying lexical analyzers-LEX - Design of lexical analyzer for a sample language.

MODULE - II   15
Parser: Need and role of the parser- Context Free Grammars -Top Down parsing-Recursive Parsing-Problems- Recursive Descent parser- Predictive Parser – LL(1) Parser -Bottom up parsers- shift reduce parser-operator precedence parsers- LR parser – LR (0) item – Construction of SLR Parsing table – CLR parser – LALR Parser. Error handling and recovery in syntax analyzer - YACC- Design of a syntax analyzer for a sample language.

MODULE - III   15
Syntax-directed definitions-Construction of syntax trees-Bottom-up evaluation, L-attributed definitions-Top down translation, Recursive Evaluator Method, Comparison of Translation Methods. Syntax directed translation for declaration statements, assignment statements, Boolean expression, control flow statements, procedure calls-Runtime Environment : Source language issues-Storage organization-Storage allocation-access to non local names - parameter passing-Symbol tables-Code Optimization and Code Generation-: Principal sources of Optimization -Optimization of basic blocks-Global Optimization- Global data flow analysis-Efficient data flow algorithms-Issues in design of a code generator-A simple code generator algorithm.

TOTAL:45

REFERENCE BOOKS
1. Aho Alfred V, Ravi Sethi and Ullman Jeffrey D, "Compilers: Principles, Techniques and Tools", Pearson Education, New Delhi, 2004.
2. Louden, Kennath C., "Compiler Construction Principles and Practice", Vikas Publishing House, New Delhi, 2004.
3. Dick Grone, Henri E Bal, Ceriel J H Jacobs and Koen G Langendoen, "Modern Compiler Design", John Wiley & Sons, USA, 2000.
4. Holub, Allen I., "Compiler Design in C", Prentice Hall of India, New Delhi, 2001.

11MC025   HUMAN RESOURCE MANAGEMENT

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Objective:
- To provide basic knowledge of Human Resource Management
- To emphasize on the integration of Human Values

MODULE – I   15
Introduction: Nature and Scope of Human Resource Management - Meaning and Definition of HRM- Objectives and Importance of HRM - Functions of HRM – Personnel Policies, Procedures and Programmes - HRM in a Changing Environment – Human Resource Development in India - Human Resource Planning - Job analysis – Job description – Job specification – Recruitment – Selection-Placement – Induction – Internal Mobility – Separation.

MODULE – II   15
Training and Development: Need for Training – Objectives - Types and Training Methods – Evaluation of Training Programme – Methods of Evaluation - Executive Development: Meaning – Scope - Objectives and Methods - Performance Appraisal: Process – Methods - Factors that distort Appraisal - Methods to Improve Performance – Performance Appraisal Vs. Potential Appraisal- Team Work - Team Building - Team Development.

MODULE – III   15
Incentives and Employee Benefits: Incentive Plans - Fringe Benefits - Employee Welfare: Importance – types – Employee Grievances – Procedures – Grievance Management in Indian Industry - Discipline: Approaches – Punishment - Dismissal and Discharge – Employee Participation – Definition - Objectives and Forms – Empowerment – Job Stress – Management of Stress – Employee Counseling and Mentoring.

TOTAL:45

REFERENCE BOOKS
1. Rao, V S P., "Human Resource Management" Second Edition Excel Books, New Delhi 2006.
2. Aswathappa, K. "Human Resource and Personnel Management – Text and Cases", Tata McGraw Hill, 2007.
3. Pattanayak Biswajeet. "Human Resource Management", Prentice Hall of India, New Delhi, 2005.
4. Bernardin, H, John. "Human Resource Management – An experiential Approach", Tata McGraw Hill, New Delhi, 2004.
5. Dessler Gary., "Human Resource Management", Prentice Hall of India, New Delhi, 2003.

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11MC026   JAVA DESIGN PATTERNS

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Objective:
- To understand about design patterns
- To use design patterns as a vocabulary for understanding and discussing object-oriented software design

MODULE – I   **15**
Design patterns : Introduction   Design Patterns – UML Diagram – Creational Pattern: Factory Pattern- AbstractFactory Pattern – Singleton Pattern – Builder Pattern – Prototype Pattern

MODULE – II   **15**
Structural Patterns: Adapter Pattern – Bridge Pattern – Composite Pattern – Decorator Pattern - Facade Pattern - Proxy Pattern

MODULE – III   **15**
Behavioral Patterns - Chain of Responsibility- Command Pattern –- Interpreter Pattern - Iterator Pattern - Mediator Pattern - Memento pattern – Observer Pattern – State Pattern - Strategy Pattern – Template Pattern – Visitor Pattern

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REFERENCE BOOKS
1. James W. Cooper," Java™ Design Patterns: A Tutorial", Addison Wesley, 2000
2. Eric Freeman, Elisabeth Freeman , Kathy Sierra, "Head First Java Design patterns", O'Reilly, 2004

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11MC031   DATA MINING

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Objective:
- To understand the basics of data mining concepts using the standard approaches practiced in the real world

MODULE – I   **15**

Introduction to Data Mining: Motivation – Data mining – Kinds of data – Data mining Functionalities – Classification of Data mining Systems **-** 7 Data Mining Task Primitives - Integration of a Data Mining System with a Database or Data Warehouse System- Major Issues -**Data Preprocessing:** Reason for preprocessing - Descriptive Data Summarization- Data Cleaning- Data Integration and Transformation- Data Reduction - Data Discretization and Concept Hierarchy Generation

MODULE - II   **15**

Mining Frequent Patterns, Associations, and Correlations: Basic Concepts- Efficient and Scalable Frequent Item set- Mining Methods- Mining Various Kinds of Association Rules- From Association Mining to Correlation Analysis- Constraint-Based Association Mining-Classification and Prediction: Definition – Issues - Classification by Decision Tree Induction- Bayesian Classification- Prediction- Accuracy and Error Measures- Evaluating the Accuracy of a Classifier or Predictor- Ensemble Methods-Increasing the Accuracy - Model Selection

MODULE - III   **15**

Cluster Analysis: Cluster Analysis- Types of Data in Cluster Analysis - Categorization of Major Clustering Methods - Partitioning Methods- Hierarchical Methods - Model-Based Clustering Methods Mining Stream, Time-Series, and Sequence Data: Mining Data Streams - Mining Time-Series Data - Mining Sequence Patterns in Transactional Databases - Mining Sequence Patterns in Biological Data

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REFERENCE BOOKS
1. Jiawei Han, Micheline Kamber , Data Mining: Concepts and Techniques, Morgan Kaufmann , Edition 2
2. Fayyad, Usama M., Piatetsky, Gregory-Shapiro, Smyth, Padhrai and Uthurusamy, Ramasamy, "Advances in Knowledge Discovery and Data Mining", The M.I.T Press, Cambridge, 1996
3. Dunham, Margaret H., "Data Mining: Introductory and Advanced Topics", Pearson Education 2004.

11MC032   SOFT COMPUTING

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Objective:
- To introduce the ideas of fuzzy sets, fuzzy logic and use of heuristics based on human experience
- To provide the mathematical background for carrying out the optimization associated with neural network learning
- To familiarize with genetic algorithms which is useful while seeking global optimum in self-learning situations

MODULE – I   **15**
Fuzzy Systems: Fuzzy Sets – Basic Definition and Terminology – Set theoretic Operations – Member Function - Formulation and Parameterization – Fuzzy Rules - Fuzzy Reasoning –Fuzzy If-Then Rules – Fuzzy Reasoning – Fuzzy Inference Systems – Mamdani Fuzzy Models – Sugeno Fuzzy Models

MODULE - II   **15**
Neural Networks: Basic Concepts - single layer perception - Multilayer Perception - Supervised Learning Neural Networks – Perceptrons - Adaline – Backpropagation- Mutilayer Perceptrons – Radial Basis Function Networks – Unsupervised Learning Neural Networks – Competitive Learning Networks – Kohonen Self Organizing Networks – Learning Vector Quantization – Hebbian Learning

MODULE - III   **15**
Neuro Fuzzy Modeling and Genetic Algorithms: Adaptive Neuro - Fuzzy Inference Systems – Architecture – Hybrid Learning Algorithm – Learning Methods – ANFIS and RBFN – Coactive Neuro Fuzzy Modeling – Framework Neuron Functions for Adaptive Networks - Genetic algorithms: Survival of the fittest- Selection- Cross Over - Mutation- reproduction

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REFERENCE BOOKS
1. Jang S.R., Sun C.T. and Mizutani E., "Neuro-Fuzzy and Soft Computing", Pearson Education, New Delhi, 2004.
2. Ross, Timothy J., "Fuzzy Logic with Engineering Applications", McGraw-Hill, New York, 1997.
3. Goldberg, Davis E., "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y., 1989.
4. Rajasekaran S. and Pai G.A.V., "Neural Networks, Fuzzy Logic and Genetic Algorithms", Prentice Hall of India, 2003.

11MC033   ARTIFICIAL INTELLIGENCE

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Objective:
- To impart a strong foundation of fundamental concepts in Artificial Intelligence
- To enable the student to apply these techniques in real applications

MODULE – I   15
Introduction and Searching Techniques: Introduction – Intelligent agents – Structure of Intelligent agents – Environments - Problem Solving Agents – Example Problems – Searching for Solutions – Uniformed Search Strategies - Avoiding Repeated States – Searching with Partial Information – Informed Search Methods : Best First Search – Heuristics Functions – Memory Bounded Search – Iterative Improvement Algorithms - Adversarial Search – Games – Optimal decisions in games – Alpha – Beta Pruning

MODULE - II   15
Knowledge Representation and Reasoning: First Order Logic – representation revisited – Syntax and Semantics for First Order Logic – Using First Order Logic – Knowledge engineering in first order logic - Inference in First order logic – Prepositional Versus First Order Logic – Unification and Lifting – Forward Chaining – Backward Chaining – Uncertain knowledge and reasoning : Uncertainty – Probabilistic Reasoning Systems – Making Simple Decisions – Making Complex Decisions

MODULE - III   15
Learning   and Its Applications: Learning from Observations - forms of Learning - Inductive Learning - Learning Decision Trees - Ensemble Learning - Knowledge in Learning – Logical formulation of Learning - Inductive Logic Programming - Statistical Learning Methods - Learning with complete data - Learning with hidden variable - EM Algorithm - Instance Based Learning - Neural Networks - Reinforcement learning – Passive Reinforcement Learning –Active Reinforcement Learning -Applications : Practical Natural Language Processing – Practical Applications – AI present and Future

TOTAL:45

REFERENCE BOOKS
1. Russell Stuart, and Norvig Peter, "Artificial Intelligence – A Modern Approach", Second Edition, Pearson Education / Prentice Hall of India, New Delhi, 2004.
2. Nilsson Nils J., "Artificial Intelligence: A new Synthesis", Harcourt Asia Pvt. Ltd., Singapore, 2000.
3. Rich Elaine and Knight Kevin, "Artificial Intelligence", Second Edition, Tata McGraw-Hill, New Delhi, 2003.
4. Luger George F., "Artificial Intelligence-Structures and Strategies For Complex Problem solving", Pearson Education / PHI, New Delhi, 2002.

11MC034   BUSINESS INTELLIGENCE AND ITS APPLICATIONS

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Objective:
- To impart the basic concepts of data warehousing
- To accentuate the business intelligence concepts
- To emphasize the need of integration, data modeling

MODULE - I   15
Introduction to Business Intelligence: Business intelligence and Information exploitation – Value of Business intelligence – Planning – The Business intelligence Environment

MODULE - II   15
Data Model and Profiling : Business models and information flow – Data warehouses, online analytical processing and meta data – Business rules – Data Profiling

MODULE - III   15
Integration and Enhancement : Data quality and information compliance - Information integration – The value of parallelism – Alternate Information Context – Data enhancement

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REFERENCE BOOKS
1. Loshin David, "Business Intelligence – The Savvy Manager's Guide", Morgan Kaufmann Publishers, San Francisco, 2003.
2. Larson Brain, "Delivering Business Intelligence with Microsoft SQL server 2008", The McGraw-Hill Company, 2009.
3. Few Stephen, "Information Dashboard Design", O'Reilly, First Edition, 2006.
4. Cindi Howson ,"Successful Business Intelligence: Secrets to making Killer BI Applications"
5. Mike Biere ,"Business Intelligence for the Enterprise"

11MC035   SEMANTIC WEB

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Objective:
- To obtain the knowledge about Semantic Web and Web Resources.
- To provide an idea about Web Ontology Language and Ontology Engineering.

MODULE – I   15

Introduction to Semantic Web &RDF: Today's Web – From Today's Web to the Semantic Web – Examples – Semantic Web Technologies – A Layered Approach – Describing Structured Web Documents Using XML: Introduction to Markup Languages – The XML Language – Structuring – Namespaces – Addressing and Querying XM Documents – Processing. RDF: Introduction: Basic Ideas – RDF: XML – Based Syntax – RDF Schema: Basic Ideas – RDF Schema –An Axiomatic Semantics for RDF and RDF Schema – A Direct Inference System for RDF and RDFS –Querying in RQL

MODULE - II   15

Web Ontology Language: OWL Introduction – The OWL Language – Examples OWL in OWL – Future Extensions – Logic and Inference: Introduction – Example of Monotonic Rules: Family Relationships – Monotonic Rules: Syntax – Monotonic Rules: Semantics – Non Monotonic Rules: Motivation and Syntax – Example of Non Monotonic Rules – Rule Markup in XML for Monotonic Rules – Rule Markup in XML for Non Monotonic Rules.

MODULE - III   15

Applications & Ontology Engineering: Horizontal Information Products – Data Integration – e-learning – Web Services – Other Scenarios. Constructing Ontologies Manually – Reusing Existing Ontologies – Using Semiautomatic Methods – On-To- Knowledge Semantic Web Architecture.

Lab Component: Building a semantic web application – creating information – combining information – aligning information – sharing information – develop semantic web services.

TOTAL:45

REFERENCE BOOKS
1. Grigorous Antoniou and Van Hermelen - "A Semantic Web Primer"-The MIT Press –2004
2. Spinning the Semantic Web: Bringing the world wide web to its full potential" , The MIT Press , 2004
3. Shelley Powers – "Practical RDF" – O'reilly publishers – First Indian Reprint : 2003

11MC036   SERVICE ORIENTED ARCHITECTURE

3   0   0   3

Objective:
- To learn the various architectural concepts of software
- To know the methodology of implementation of Web Services
- To learn the concepts of XML and Web services security

MODULE – I   15
Fundamentals: Software architecture – Types of IT architecture – SOA – Evolution – Key components – perspective of SOA – Enterprise-wide SOA – Architecture – Enterprise applications – Solution architecture for enterprise application – Software platforms for enterprise applications – Patterns for SOA – SOA programming models- Service-oriented analysis and design – Design of Activity, Data, Client and business process services

MODULE – II   15
Technologies: SOA – SOAP – WSDL – JAX – WS – XML WS for .NET – Service integration with ESB – Scenario – Business case for SOA – Stakeholder objectives – Benefits of SPA – Cost savings - SOA implementation and Governance – strategy – SOA development – SOA governance – Trends in SOA – Event-driven architecture – Software as a service – SOA technologies – Proof-of-concept – Process orchestration – SOA best practices

MODULE – III   15
XML and Security: Meta data management – XML security – XML signature – XML encryption – SAML – XACML – XKMS – WS-Security – Security in web service framework - Advanced messaging – Transaction processing – Paradigm – Protocols and coordination – Transaction specifications – SOA in mobile – Research issues   .

TOTAL:45

REFERENCE BOOKS
1. Shankar Kambhampaly, "Service-Oriented Architecture for Enterprise Applications", Wiley India Pvt Ltd, 2008.
2. Eric Newcomer and Greg Lomow, "Understanding SOA with Web Services", Pearson Education, 2005.
3. Eric Pulier, and Hugh Taylor, "Understanding Enterprise SOA" , Wiley India Pvt., Ltd, 2009.
4. Thomas Erl , "Service-Oriented Architecture: Concepts, Technology and Design", Prentice Hall India, 2005.
5. Mark O' Neill, et al., "Web Services Security", Tata McGraw-Hill Edition, 2003.

<p style="text-align: center;">**11MC041   GRID COMPUTING**</p>

<p style="text-align: right;">**3   0   2   4**</p>

Objective:
- To understand the genesis and applications of grid computing
- To learn the technology and tool kits of grid computing

MODULE – I   **15**

Introduction: Grid activities - Grid Business Areas – Applications – Infrastructure - Grid Computing Organizations and their Roles: Organizations Developing Grid Standards and Best Practice Guidelines - Organizations developing Grid Computing Toolkits and the Framework - Organizations building and using Grid Base Solutions to Solve Computing - Data and Network Requirements - Grid Computing Anatomy: Grid problem-Grid Architecture.

MODULE - II   **15**

Grid Computing Road Map: Autonomic computing - Business on Demand and Infrastructure Virtualization - Service Oriented Architecture - Semantic Grids - Grid Computing Technological Viewpoints: Open Grid Service Architecture (OGSA) – Introduction - Architecture-Goals - OGSA Platform Components: Native platform services – Mechanisms - OGSA Hosting Environment - Core Networking services – Security – Infrastructure - Basic Services- Open Grid Services Infrastructure (OGSI): Introduction - Grid services – OGSI - Technical details- Introduction to service data components- Grid service: Naming and Change Management Recommendations. OGSA Basic Services: Common Management Model (CMM)-Service Domains- Policy Architecture- Security Architecture- Mastering and Accounting- Common Distributed Logging.

MODULE - III   **15**

Globus GT3 Toolkit: Architecture, GT3 Software Architecture Model- Default Server Side - Framework - security - System Level Services - Globus Gt3 Toolkit Programming Model: Introduction- Service programming model- Grid Service Behavior Implementation- Operation Providers- Factory Call Back Mechanisms- Grid Service Life Cycle- Management - Service Activation and Deactivation- Custom Query Engines and Evaluators- GT3tools- Configuration- Security- Advanced Grid services- Advanced Service Data Concepts - Operation Providers.

<p style="text-align: right;">**Lecture:45, Practical:l5, TOTAL:60**</p>

REFERENCE BOOKS
1. Joshy Joseph and Craig Fellenstein , "Grid Computing", Prentice Hall of India, New Delhi, 2003.
2. Daniel Minoli, A "Networking approach to Grid Computing", John Wiley & Sons, New York, 2006.
3. Ian Foster & Carl Kesselman., "The Grid Blueprint for a New Computing Infrastructure", Morgan Kaufmann
4. Ahmar Abbas, "Grid Computing: A Practical Guide to technology and Applications", Sharles River media – 2003.

11MC042   CLOUD COMPUTING

3   0   2   4

Objective:
- To explore cloud computing concepts and technologies
- To introduce various possibilities of cloud services
- To introduce infrastructure, platforms and standards needed for the cloud
- To enable the cloud to mobile devices and platforms

MODULE – I   **15**

Cloud and Services: Introduction – Evolution of cloud computing – Hardware evolution – Internet software evolution – Server virtualization – Web services overview - IaaS - PaaS – SaaS-XaaS
Cloud Networks: Building cloud networks – Cloud data center – Service oriented architecture - Virtualization – Federation – Presence – Identity Privacy.

MODULE – II   **15**

Access to Cloud: Hardware and infrastructure – Clients – Security – Network – Services - Accessing the cloud – Platforms – Web applications – Web APIs- Web browsers
Standards and Infrastructure: Cloud storage overview – Cloud service providers – Standards-application – Client – Infrastructure – Service – Software as a service overview –Driving forces – Software and services – Developing applications.

MODULE – III   **15**

Security and Standards: Secuity – Challenges – SaaS security – Common standards – Open cloud consortium – Standards for application developers, Messaging and security
Mobile Platform: End user access – Mobile Internet devices – Smartphone – Mobile operating systems – Mobile platform virtualization – Collaboration applications

Lecture:45, Practical:l5, TOTAL:60

REFERENCE BOOKS
1. Rittinghouse John, and Ransome James, "Cloud Computing: Implementation, Management, and Security", CRC Press, 2010.
2. Toby Velte, Anthony Velte and Robert Elsenpeter, "Cloud Computing - A Practical Approach", Tata McGraw Hill, 2010.
3. Michael Miller, "Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online", QUE publishing, 2009.
4. Jeorge Reese, "Cloud Application Architectures: Building Applications and Infrastructure in the cloud", O Rilly Publications, 2009.
5. Miller F.P., Vandome A.F and Mc Brewster John., "Cloud Computing", Alphascript Publishing, 2009.

11MC043   MOBILE APPLICATION DEVELOPMENT

                                                        3   0   2   4

Objective:
- To introduce basic concepts of structured programming language
- To make the students familiar about the concepts of pointers and files
- To develop simple applications using C languages

MODULE – I   15

Java 2 Micro Edition (J2ME): Introduction: Understanding J2ME – Building MIDlets – About MIDlets – Inherited from J2SE – Creating an User Interface – Lists and Forms – Custom Items – Connecting to the world of Internet – Wireless Messaging API – 3D Graphics

MODULE-II   15

Android Application Development: Introduction: Understanding Android Development Environment – Setting up an Android Development Environment – Building and Deploying an Android Application –Designing the User Interface –Exploring 2D Graphics – Connecting to Internet – Putting SQL to Work

MODULE- III   15

Mobile Web Development:: Introduction: Set Up Your Mobile Web Development Environment - Mobile Markup Languages. Advanced Mobile Web Development Techniques: Mobile Web Usability - Enhancing Mobile Web Pages for Smartphone Browsers. Deploying into the Mobile Ecosystem: Optimizing Mobile Markup - Validating Mobile Markup- Testing a Mobile Web Site - Deploying a Mobile Web Site

Lecture:45, Practical:l5, TOTAL:60

REFERENCE BOOKS

1. Sing Li and Jonathan Knudsen ,"Beginning J2ME: From Novice to Professional", Third Edition, Apress Publisher, 2005
2. Ed Burnette ,"Hello, Android: Introducing Google's Mobile Development Platform" ,3rd Edition Pragmatic Bookshelf Publisher 2010
3. Gail Rahn Frederick with Rajesh Lal ,"Beginning Smartphone Web Development: Building JavaScript, CSS, HTML and Ajax-based Applications for iPhone, Android, Palm Pre, BlackBerry, Windows Mobile, and Nokia S60",Apress Publisher, 2009
4. Keogh James, "J2ME: The Complete Reference", Tata McGraw Hill edition, 2003.
5. John W. Muchow ,"Core J2ME™ Technology and MIDP" , Prentice Hall PTR Publisher
6. Vartan Piroumian ,"Wireless J2ME™ Platform Programming", Prentice Hall PTR Publisher

3   0   2   4

Objective:
- To gain knowledge in the concepts of .NET framework
- To gain programming skills in C#
- To know how to develop and deploy a project

MODULE – I   **15**
C# Programming : Introduction to C# - Overview of C# - Literals – Variables - Data Types- Arrays – Operators - Expressions - Control Structures – Methods - Strings - Structures- Enumerations – Classes - Objects - Constructors -Destructors-Inheritance-Polymorphism- Interfaces- Overloading - Overriding – Delegates - Events - Errors and Exceptions - Conversion Between Types – Boxing and UnBoxing.

MODULE - II   **15**
Overview of ASP.NET: Understanding. NET -. NET Architecture and .NET Framework- HTML Forms-Web Forms- Action Attribute- Method Attribute- HTML Form Controls - HTML and Web Server Controls -Navigation Controls-Validation Controls- Custom Web Controls-Master Pages – Themes – Building Windows Applications and Web Applications.

MODULE - III   **15**
Database Programming with ADO.Net: Architecture of ADO.NET - Connected and Disconnected Database - Data Providers - Connection Class -Command Class - Data Adapter Class - Dataset Class - Data Reader - Data Table Objects - Database Accessing on web applications: Data Binding - Data grid- Binding Web Server Controls - Programming Web Applications with Web Forms - Microsoft SQL Server and ADO.NET - Deployment - XML in ADO.NET - ASP.NET Web services - Event Handling - Error Handling-State Management

Lecture:45, Practical:l5, TOTAL:60

REFERENCE BOOKS
1. Macdonald, Matthew., "Beginning ASP .NET 3.5 in C# 2008: From Novice to Professional", Second Edition, Apress, 2008.
2. Macdonald, Matthew.,"ASP.NET: The Complete Reference", Tata mcgraw-Hill, New Delhi, 2002.
3. Troelsen, Andrew., "Pro C# 2008 and the .NET 3.5 Platform", Apress Publication, 2008.
4. Schildt, Herbert., "The Complete Reference: C#", Tata mcgraw-Hill, New Delhi, 2004.
5. Parihar, Mridula., Ahmed, Essam., Chandler, Jim and Hatfield, Bill., "ASP .NET Bible", John Wiley & Sons, New York, 2001

11MC045   DIGITAL IMAGE PROCESSING

3   0   2   4

Objective:
- To implement the real time applications using various methods
- To analyze and compare the performance with the conventional standards.
- To study the techniques for improving the quality of images.

MODULE – I   15
Digital Image Fundamentals and Transforms: Elements of digital image processing systems- Elements of visual perception- Light and the Electromagnetic Spectrum- Image sensing and Acquisition- brightness- contrast- hue- saturation- mach band effect -Image sampling- Quantization - Basic relationship between pixels - Color image fundamentals - RGB- HSI models. Image Trasforms: 1D DFT- 2D transforms – DFT- DCT- Discrete Sine, Walsh- Hadamard, Slant- Haar, Hough Transform, KL transforms - properties of transforms.

MODULE – II   15
Image Enhancement and Restoration: Spatial domain enhancement: gray level transformations - histogram equalization - Image averaging- Spatial filtering: Smoothing, Sharpening filters– Frequency domain filters: Smoothing – Sharpening filters - Homomorphic filtering- Image Restoration: degradation model- Unconstrained and Constrained restoration- Inverse filtering - Wiener filtering.

MODULE – III   15
Image Segmentation, Compression and Representation: Point- line and edge detection- Thresholding - Region based segmentation: Region splitting and merging. Need for data compression- Lossless compression-Lossy compression-compression standards. Image representation: chain codes – polygonal approximations – signatures – boundary segments – skeletons - Regional descriptors – Simple descriptors- Texture.

Lecture:45, Practical:l5, TOTAL:60

REFERENCE BOOKS
1. Gonzalez Rafael C and Woods Richard E, "Digital Image Processing", Second Edition, Pearson Education, New Delhi, 2004.
2. Jain Anil K., "Fundamentals of Digital Image Processing", Prentice Hall of India, New Delhi, 2002.
3. John C. Russ, "The Image Processing Handbook", Fifth Edition, Prentice Hall, New Jersey, 2002.
4. Pratt William K, "Digital Image Processing", John Wiley, New York, 2002.

11MC046   ADVANCED WEB DEVELOPMENT

3	0	2	4

Objective:
- To introduce advanced concepts in web technologies
- To learn Aspect oriented programming
- To learn Hibernate for the storing and retrieving of Java domain objects via Object/Relational Mapping.

MODULE – I   15
Java Server Faces: Introduction – Java Server Framework – Java Server Faces Application – Life Cycle - Java Server Faces Page – User interface Component Model – Navigation Model – using Java Server Faces Technology – Creating custom UI components

MODULE - II   15
Spring Framework: Introduction – Ioc Container – Container and Beans –Resources – Validation – data binding –Bean Wrapper – Property Editors – Aspect Oriented Programming – web MVC Frame work – integrating View technologies – JSP – JSTL - Titles

MODULE - III   15
Hibernate: Introduction – Architecture – Mapping Associations – Configuration –Obtaining Optional Configuration Properties – Persistent Classes – Basic O/R Mapping – Hibernate Types – Collection Mapping – Advanced Collection Mapping – Association Mapping –Component Mapping – Inheritance Mapping – working with hibernate objects – Hibernate Query language

Lecture:45, Practical:l5, TOTAL:60

REFERENCE BOOKS
1. Hans Bergsten, "Java Server Faces Technology" Sun Microsystems, 2003.
2. Rod Johnson, Juergen Hoeller, "The Spring frame Work-Reference e Documenation".
3. Gavin King, Christian Bauer, Max Rydahl Andersen, "Hibernate Reference Documentation".
4. B.M. Harwani ,"Java server Faces: A Practical Approach for Beginners" , PHI 2009.