## M.KUMARASAMY COLLEGE OF ENGINEERING, KARUR

(AUTONOMOUS)

REGULATIONS 2012

B.TECH. INFORMATION TECHNOLOGY

CURRICULUM FROM III TO VI SEMESTERS

(Applicable to the students admitted from the Academic year 2012-2013 onwards)

### SEMESTER III

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AIM:

To facilitate the understanding of the principles and to cultivate the art of formulating physical problems in the language of mathematics.

OBJECTIVES:

At the end of the course, the students would be acquainted with the basic concepts in numerical methods and their uses are summarized as follows:

The roots of nonlinear (algebraic or transcendental) equations, solutions of large system of linear equations and eigen value problem of a matrix can be obtained numerically where analytical methods fail to give solution.

When huge amounts of experimental data are involved, the methods discussed on interpolation will be useful in constructing approximate polynomial to represent the data and to find the intermediate values.

The numerical differentiation and integration find application when the function in the analytical form is too complicated or the huge amounts of data are given such as series of measurements, observations or some other empirical information.

Since many physical laws are couched in terms of rate of change of one/two or more independent variables, most of the engineering problems are characterized in the form of either nonlinear ordinary differential equations or partial differential equations. The methods introduced in the solution of ordinary differential equations and partial differential equations will be useful in attempting any engineering problem.

UNIT I SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS 9+3


UNIT II INTERPOLATION AND APPROXIMATION 9+ 3

Gregary Newton Forward interpolation - Backward interpolation – striling interpolation - Lagrangian Interpolation – Hermites Interpolation - Interpolating with a cubic spline –

UNIT III NUMERICAL DIFFERENTIATION AND INTEGRATION 9+ 3

Derivatives based on Newton”s forward and backward interpolation – Partial derivatives based on Finite differences - Numerical integration by Newton Cote”s Quadrature formulae - Romberg”s method – Lobatto Integration method – Double integrals using trapezoidal and Simpson”s rules.

UNIT IV INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL EQUATIONS 9+ 3

UNIT V BOUNDARY VALUE PROBLEMS IN ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS

Finite difference solution of second order ordinary differential equation – Finite difference solution of one dimensional heat equation by explicit and implicit methods – One dimensional wave equation and two dimensional Laplace and Poisson equations.

TOTAL: 60

TEXT BOOKS:


REFERENCE BOOKS:

AIM:
To provide an understanding of the fundamentals of digital logic and digital circuit design

OBJECTIVES:
To understand Boolean algebra, Boolean functions and realization of functions with basic gates.
To design combinational and sequential circuits.
To design circuits with MSI devices.
To learn the use of HDL for designing larger systems.

UNIT I BOOLEAN ALGEBRA AND LOGIC GATES

Number Systems: Binary, Octal, Decimal, Hexadecimal Number systems – complements – Binary
Boolean algebra: Boolean postulates and laws –De-Morgan’s Theorem- Principle of Duality-Boolean
expression – Minimization of Boolean expressions– Sum of Products (SOP), Product of Sums (POS)
and its Conversion– Minimization: Karnaugh map, Tabulation Method-Don’t care conditions. Logic
Gates- Implementations of Logic Functions using gates, NAND –NOR implementations.

UNIT II COMBINATIONAL LOGIC

Design procedure of Combinational circuits: Adders - Subtractors – Parallel adder/ Subtractor- Carry
look ahead adder- BCD adder- 2- bit Magnitude Comparator- Multiplexer / Demultiplexer- Encoder /
Decoder – Parity Generator/Checker – Code converters: Binary to Gray – Gray to Binary - BCD to
Excess 3 – Excess 3 to BCD -Implementation of combinational logic using decoders and multiplexers.

UNIT III SYNCHRONOUS SEQUENTIAL LOGIC

Flip flops SR, JK, T, D and Master slave – Characteristic and excitation tables and equations –Level and
Edge Triggering –Realization of one flip flop using other flip flops – counters - Ring counters and
Sequence detector - Design of Synchronous counters - Registers – shift registers- Universal shift register
- Analysis and design of sequential circuits with state diagram, State table, State minimization and State
assignment.

UNIT IV ASYNCHRONOUS SEQUENTIAL LOGIC

Design of fundamental mode – primitive state / flow table – Minimization of primitive state table – state
assignment – Excitation table - cycles – Races –Hazards: Static, Dynamic and Essential – Hazards
elimination – Introduction to Hardware Description Language (HDL) – HDL for Flip Flops – Shift
Registers – Counters.
UNIT V MEMORY AND PROGRAMMABLE LOGIC DEVICES

Classification of memories – ROM Organization: PROM, EPROM, EEPROM – RAM Organization: Static RAM, Dynamic RAM - Programmable Logic Array (PLA) - Programmable Array Logic (PAL) – Field Programmable Gate Arrays (FPGA) - Implementation of combinational logic circuits using PROM, PLA, PAL

TOTAL : 45

TEXT BOOKS:


REFERENCE BOOKS:

AIM:
To provide an in-depth knowledge in problem solving techniques and data structures.

OBJECTIVES:
To learn the systematic way of solving problems
To understand the different methods of organizing large amounts of data
To learn to program in C
To efficiently implement the different data structures
To efficiently implement solutions for specific problems

UNIT I LINEAR DATA STRUCTURES
List: List ADT – Arraybased implementation – Linked list implementation – Cursor-based linked lists – Doubly-linked lists – Applications of lists.
Stacks: Stack ADT – Array Representation and Implementation of stack – Operations on Stacks – Array Representation of Stack – Linked Representation of Stack – Application of stack.
Queues: Array and linked representation and implementation of queues – Operations on Queue – Applications of Queue.

UNIT II TREE STRUCTURES
Basic Terminologies – Binary Tree – The Search Tree ADT – Binary Search Trees- AVL Tree – B-trees – Splay Tree - Tree Traversal – Applications of Trees.

UNIT III HASHING AND PRIORITY QUEUE

UNIT IV GRAPH

UNIT V SORTING TECHNIQUES

TOTAL: 45
TEXT BOOKS:


REFERENCE BOOKS:

AIM:

To understand the concepts of object-oriented programming and master OOP using C++.

OBJECTIVES:

To identify and practice the object-oriented programming concepts and techniques

To practice the use of C++ classes and class libraries, modify existing C++ classes, develop C++ classes for simple applications

To practice the concepts of Object-Oriented Analysis and Design (OOA/OOD) and design patterns and frameworks by developing a C++ based project.

UNIT I INTRODUCTION

Programming paradigms-Basic concepts and benefits of OOP-Structure of C++ program- Tokens-Keywords-Identifier-Constants-Datatypes-Functions-Statements-Dynamic initialization - Reference Variables-Scope Resolution Operator-Member dereferencing operators-memory management operators-An Overview of C++.

UNIT II CLASSES & OBJECTS

Classes & Objects – Arrays-Pointers- References-Dynamic Allocation Operators- Function Overloading – Copy constructors – Default Arguments

UNIT III INHERITANCE & POLYMORPHISM


UNIT IV TEMPLATE & EXCEPTION HANDLING

Templates – Exception Handling – Run Time Type ID and the Casting Operators.

UNIT V FILE I/O

The C++ I/O System basics – C++ file I/O –Introducing the Standard Template Library.

TOTAL: 45
**TEXT BOOKS:**


**REFERENCE BOOKS:**

AIM:
To understand the basics of digital design, the design of various components of the computer system and its organization.

OBJECTIVES:
To understand the fundamentals of Boolean logic and functions.
To design and realize these functions with basic gates, and other components using combinational and sequential logic.
To understand the design and organization of a von-neumann computer system.
To comprehend the importance of the hardware-software interface.

UNIT I BASIC STRUCTURE OF COMPUTERS 9

UNIT II ARITHMETIC AND BASIC PROCESSING UNIT 9

UNIT III PIPELINING 9

UNIT IV MEMORY SYSTEM 9

UNIT V I/O ORGANIZATION 9

TOTAL: 45
TEXT BOOKS:


REFERENCE BOOKS:

AIM:
The aim is to introduce the basics of algorithm design paradigms and analysis to enable designing of efficient algorithms.

OBJECTIVES:
To introduce the basic concepts of algorithm analysis
To introduce the design paradigms for algorithm design
To introduce the basic complexity theory.

UNIT I BASIC CONCEPTS OF ALGORITHMS
Mathematical Analysis of Non–recursive Algorithm – Mathematical Analysis of Recursive Algorithm.

UNIT II ANALYSIS OF SORTING AND SEARCHING ALGORITHMS

UNIT III GREEDY ALGORITHMS
Greedy Algorithms: General Method – Container Loading – Knapsack Problem - Prim’s Algorithm – Kruskal’s Algorithm – Dijkstra’s Algorithm- Huffman trees

UNIT IV DYNAMIC PROGRAMMING
Dynamic Programming: General Method – Multistage Graphs – All-Pair shortest paths – Optimal binary search trees – 0/1 Knapsack – Travelling salesperson problem.

UNIT V BACKTRACKING

TOTAL: 45

TEXT BOOKS:
REFERENCE BOOKS:

AIM:
The aim of this laboratory is to provide a background in digital electronics and to give an understanding of the fundamentals of computer hardware.

OBJECTIVES:

To understand the main building blocks of digital circuits.

To understand the components of Microprocessor systems, in particular microcontrollers. To understand the practical aspects of digital electronics.

1. Verification of Boolean theorems using digital logic gates.
2. Design and implementation of combinational circuits using basic gates and universal gates.
3. Design and implementation of code converters.
4. Design and implementation of 4-bit binary adder/subtractor using basic gates and MSI devices.
5. Design and implementation of parity generator/checker using basic gates and MSI devices.
6. Design and implementation of magnitude comparator.
7. Design and implementation of Multiplexers/Demultiplexers.
8. Verification of operation of flip-flops.
9. Design and implementation of Shift registers in SISO, SIPO, PISO, PIPO modes using suitable IC’s.
10. Design and implementation of Synchronous counters/Asynchronous counters.
11. Simulation Of Combinational Circuits- Multiplexer and Demultiplexers using Hardware Description Language (HDL) (VHDL/Verilog HDL Software Required)
12. Simulation Of Sequential Circuits- Flip-flops using Hardware Description Language (HDL)
13. (VHDL/Verilog HDL Software Required)
AIM:
To teach the principles of good programming practice and to give a practical training in writing efficient programs in C

OBJECTIVES:

• To teach the students to write programs in C
• To implement the various data structures as Abstract Data Types
• To write programs to solve problems using the ADTs

1. Array Implementation of List ADT
2. Linked List Implementation of List ADT
3. Implementations of Stack ADT
4. Balanced Parenthesis
5. Evaluating Postfix Expressions Queue ADT
6. Search Tree ADT – Binary Search Tree
7. Tree Traversal
8. Heap Sort
9. Quick Sort
AIM:
The aim of this course is to provide a solid introduction to programming in C++ and to provide an overview of the principles and constraints that affect the way in which C++ programming languages have been designed and is used.

OBJECTIVES:

- Explain the principles of the object oriented programming paradigm specifically including abstraction, encapsulation, inheritance and polymorphism
- Use an object oriented programming language, and associated class libraries, to develop object oriented programs
- Design, develop, test, and debug programs using object oriented principles in conjunction with an integrated development environment
- Describe and explain the factors that contribute to a good object oriented solution.

1. Design C++ classes with static members, methods with default arguments, friend functions. (For example, design matrix and vector classes with static allocation, and a friend function to do matrix-vector multiplication)
2. Implement complex number class with necessary operator overloading and type conversions such as integer to complex, double to complex, complex to double etc.
3. Implement Matrix class with dynamic memory allocation and necessary methods. Give proper constructor, destructor, copy constructor, and overloading of assignment operator.
4. Overload the new and delete operators to provide custom dynamic allocation of memory.
5. Develop a template of linked-list class and its methods.
6. Develop templates of standard sorting algorithms such as bubble sort, insertion sort, merge sort, and quick sort.
7. Design stack and queue classes with necessary exception handling.
8. Define Point class and an Arc class. Define a Graph class which represents graph as a collection of Point objects and Arc objects. Write a method to find a minimum cost spanning tree in a graph.
9. Develop with suitable hierarchy, classes for Point, Shape, Rectangle, Square, Circle, Ellipse, Triangle, Polygon, etc. Design a simple test application to demonstrate dynamic polymorphism and RTTI.
10. Write a C++ program that randomly generates complex numbers (use previously designed Complex class) and writes them two per line in a file along with an operator (+, -, *, or /). The numbers are written to file in the format (a + ib). Write another program to read one line at a time from this file, perform the corresponding operation on the two complex numbers read, and write the result to another file (one per line).
Career Skill Development Test I
Aptitude: Time & Distance, Problems on Trains

Time, Distance, Speed – Relation; Ratio between speed and time; Average Speed; Trains moving in same direction; Trains moving in opposite direction; conversion of units

Communication:
JUST A MINUTE (200 mins)
(To identify the students communication level and based on their performance they will be split into various groups)
HEALTHY GROUPS (100 mins)
(Based on their scores students will be accommodated in their suitable groups)
KTY (Know Your Team)
Students will introduce themselves to their team members

Career Skill Development Test II
Aptitude: Logic Sums, probability+ CSD test- I Syllabus

Check the feasibility of logic; Problems based on Dice, Cards, Coins, Colour Balls,
Communication:
EXTEMPORE (200 mins)
(On the spot topic will be given to each students in a group to stimulate their thinking power).
SKIT- IN ENGLISH (200 mins)

Career Skill Development Test III
Aptitude: Simplification, venn diagrams, Area

Simplification of complex equations using short-cut methods; check the logic using venn diagrams; Calculation of Area for Rectangle, Square, Triangle, Circle, Semi – Circle and related problems

Communication:
ROLE PLAY (200 mins)
(Individual performance to each students / group by role playing on their given situations)
STORY BUILDING (200 mins)
(Good moral stories will be circulated to a group of students to narrate suitable conclusion)
Career Skill Development Test IV
Aptitude: Volume, Surface Area, Statement & Arguments + CSD TEST III Syllabus

Calculation of Volume & Surface Area for Cuboid, Cube, Cylinder, Cone, Sphere, Hemi Sphere; Check the Arguments with statement

Communication:
ESSAY WRITING & LETTER WRITING (200 mins)
Additional Activities
   News paper reading
   Lateral Thinking quiz
   Word games
   Grammar Games

Textbook reference for Aptitude:
“Quantitative Aptitude” by R.S. Aggarwal
“Verbal & Non Verbal Reasoning” by R.S. Aggarwal
SEMMESTER-IV

UMA12401  PROBABILITY AND QUEUING THEORY  
(Common to CSE & IT)  L T P C  3 1 0 4

AIM:

The probabilistic models are employed in countless applications in all areas of science and engineering. Queuing theory provides models for a number of situations that arise in real life. The course aims at providing necessary mathematical support and confidence to tackle real life problems.

OBJECTIVES:

At the end of the course, the students would

- Have a fundamental knowledge of the basic probability concepts.
- Have a well – founded knowledge of standard distributions which can describe real life phenomena.
- Acquire skills in handling situations involving more than one random variable and functions of random variables.
- Understand and characterize phenomena which evolve with respect to time in a probabilistic manner.
- Be exposed to basic characteristic features of a queuing system and acquire skills in analyzing queuing models.

UNIT I – RANDOM VARIABLES  (9+3)

Discrete and continuous random variables - Moments - Moment generating functions and their properties. Binomial, Poisson ,Geometric ,Negative binomial, Uniform, Exponential, Gamma, and Weibull distributions .

UNIT II – TWO DIMENSIONAL RANDOM VARIABLES  (9 + 3)

Joint distributions - Marginal and conditional distributions – Covariance – Correlation and regression - Transformation of random variables - Central limit theorem.

UNIT V – MARKOV PROCESSES AND MARKOV CHAINS  (9 +3)

Classification - Stationary process - Markov process - Markov chains – Transition probabilities - Limiting distributions-Poisson process

UNIT V – QUEUING THEORY  (9 +3)

Markovian models – Birth and Death Queuing models- Steady state results: Single and multiple server queuing models- queues with finite waiting rooms- Finite source models-Little’s Formula

UNIT V – NON-MARKOVIAN QUEUES AND QUEUE NETWORKS  (9+3)

M/G/1 queue- Pollaczek- Khintchine formula, series queues- open and closed networks

TOTAL : 45/60
TEXT BOOKS:

1. O.C. Ibe, “Fundamentals of Applied Probability and Random Processes”, Elsevier, 1st Indian Reprint, 2007 (For units 1, 2 and 3).

REFERENCE BOOKS:

AIM:
To have an in depth knowledge of the architecture and programming of 8-bit and 16-bit Microprocessors, Microcontrollers and to study how to interface various peripheral devices with them.

OBJECTIVES:

To study the basic architectures and operational features of the processors and Controllers
To learn the assembly language programming
To design and understand the multiprocessor configurations
To understand the interfacing concepts of the peripheral devices with that of the Processors

UNIT I 8085 MICROPROCESSOR
Introduction to 8085, Microprocessor architecture - Addressing modes - Instruction set – Interrupts - Programming with 8085.

UNIT II 8086 SOFTWARE ASPECTS

UNIT III MULTIPROCESSOR CONFIGURATION

UNIT IV I/O INTERFACING WITH 8085

UNIT V 8051 MICROCONTROLLER AND INTERFACING

TOTAL: 45
TEXT BOOKS:


REFERENCE BOOKS:

AIM:
To study about the various modulation techniques like amplitude and angle modulation, that is used for data transmission and reception of analog signals and also to understand about the modulation techniques used for digital transmission along with spread spectrum and multiple access techniques.

OBJECTIVES:
• To study about the amplitude modulation techniques.
• To study about the angle modulation techniques.
• To understand about the modulation techniques used for digital data transmission.
• To have the knowledge about the digital communication.
• To study about the spread spectrum and multiple access techniques.

UNIT I – AMPLITUDE MODULATION - TRANSMISSION AND RECEPTION 9
Principles of amplitude modulation – AM envelope, frequency spectrum and bandwidth, modulation index and percentage modulation, AM power distribution, AM transmitters – low level transmitters, high level transmitters. AM reception: AM receivers- Super heterodyne receivers, Double Conversion AM receivers. (Block Diagrams only)

UNIT II - ANGLE MODULATION - TRANSMISSION AND RECEIPTON 9
Angle Modulation – FM and PM waveforms, phase deviation and modulation index, frequency deviation, phase and frequency modulators and demodulators, Narrowband FM and Broadband FM, Angle modulation Vs amplitude modulation. FM Receivers: Block diagrams of direct FM demodulators, Frequency Vs Phase modulation

UNIT III - DIGITAL MODULATION AND MULTIPLE ACCESS TECHNIQUE 9
Introduction, ASK, BPSK, DPSK, QPSK, BFSK, Duo Binary Encoding-Performance Comparision Of Various Systems of Digital Modulation. Multiple access technique-FDMA, TDMA and CDMA, Comparisons of Various Multiple access techniques.

UNIT IV – BASE BAND DATA TRANSMISSION 9

UNIT V – SPREAD SPECTRUM AND ERROR CONTROLLING TECHNIQUES 9
Introduction, Pseudo Noise sequence, DS Spread spectrum with coherent binary PSK, Processing gain, FH Spread spectrum. Error controlling techniques- Linear Block Codes, Cyclic Codes, Convolution Codes.

Total Hours: 45
TEXT BOOKS:

1. Kolimbiris "digital communication systems" with satellite & optical communication Pearson education
2. Simon Hawkins "communication systems" second edition

REFERENCE BOOKS:

AIM:
The course is intended to give Software Engineering principles in classical sense.

OBJECTIVES:

To be aware of a member of generic models to structure the software development process.
To understand fundamental concepts of requirements engineering and requirements specification.
To understand different notion of complexity at both the module and system level
To be aware of some widely known design methods.
To understand the role and contents of testing activities in different life cycle phases

UNIT I INTRODUCTION TO SOFTWARE ENGINEERING

UNIT II SOFTWARE REQUIREMENTS
Requirements Engineering–Establishing Groundwork- Eliciting Requirements – Developing usecase - Requirement Analysis -Scenario Based Modeling-Data Modeling Concepts-Class Based Modeling-UML models that supplement the use case

UNIT III DESIGN CONCEPTS

UNIT IV TESTING THE SYSTEM

UNIT V SOFTWARE CONFIGURATION MANAGEMENT

TOTAL: 45
TEXT BOOKS:


REFERENCE BOOKS:

AIM:
To provide a strong foundation in database technology and an introduction to the current trends in this field.

OBJECTIVES:

- To learn the fundamentals of data models and to conceptualize and depict a database system using ER diagram.
- To make a study of SQL and relational database design.
- To understand the internal storage structures using different file and indexing techniques which will help in physical DB design.
- To know the fundamental concepts of transaction processing - concurrency control techniques and recovery procedure.
- To have an introductory knowledge about the Storage and Query processing techniques.

UNIT I INTRODUCTION
10

UNIT II RELATIONAL MODEL
9
Relational Model: Structure of Relational Databases - Relational Algebra - Tuple Relational Calculus - Domain Relational Calculus - Extended Relational Algebra Operations - Functional dependences and Normalization for Relational Databases (up to BCNF).

UNIT III DATA STORAGE AND QUERY PROCESSING
9

UNIT IV TRANSACTION MANAGEMENT
9
UNIT V CURRENT TRENDS


TOTAL: 46

TEXT BOOKS:


REFERENCE BOOKS:

AIM:
The course introduces the students to the basic principles of operating systems.

OBJECTIVES:
To be aware of the evolution of operating systems
To learn what processes are, how processes communicate, how process synchronization is done and how to manage processes
To have an understanding of the main memory and secondary memory management techniques.
To understand the I/O Subsystem
To have an exposure to Linux and Windows 2000 operating systems

UNIT I OPERATING SYSTEMS OVERVIEW

UNIT II PROCESS SCHEDULING AND SYNCHRONIZATION

UNIT III DEADLOCK AND STORAGE MANAGEMENT

UNIT IV FILE SYSTEMS & I/O SYSTEMS

UNIT V DISTRIBUTED SYSTEMS

TOTAL: 45
TEXT BOOKS:

REFERENCE BOOKS:
AIM:
To learn the assembly language programming of 8085, 8086 and 8051 and also to give a practical training of interfacing the peripheral devices with the processor.

OBJECTIVES:
To implement the assembly language programming in 8085, 8086 and 8051
To study the system function calls like BIOS/DOS.
To experiment the interface concepts of various peripheral device with the processor.

1. Programming with 8085- 8 Bit and 16 Bit Arithmetic and Logical Operations.
3. Interfacing with 8085-Parallel Communication Interface, 8253, 8279, 8251.
4. Interfacing with 8085-Serial Communication Interface.
5. Interfacing with 8085 Keyboard and Display Controller.
6. Programming with 8086-experiments including BIOS/DOS calls: Keyboard control, Display, File Manipulation.
7. Interfacing with 8086 - Parallel Communication Interface.
8. Interfacing with 8086 – Serial Communication Interface.
10. Interfacing with 8051 Microcontroller with Traffic Light Controller.
AIM:

The aim of this laboratory is to inculcate the abilities of applying the principles of database management systems. The course aims to prepare the students for projects where a proper implementation of databases will be required.

OBJECTIVES:

- The students will be able to create a database file
- The students will be able to query a database file
- The students will be able to append and update a database file

1. Data Definition Language (DDL) commands in RDBMS.
2. Data Manipulation Language (DML) and Data Control Language (DCL) commands in RDBMS.
3. High-level language extension with Cursors.
4. High level language extension with Triggers
5. Procedures and Functions.
6. Embedded SQL.
7. Design and implementation of Payroll Processing System.
8. Design and implementation of Banking System.
9. Design and implementation of Library Information System.
10 Database Design using E-R model and Normalization.
AIM:

To have hands-on experience in operating system concepts and programming in the UNIX environment.

OBJECTIVES:

To learn shell programming and the use of filters in the UNIX environment.
To learn to program in C using system calls.
To learn to use the file system related system calls.
To have a knowledge in how processes are created and processes communicate.
To learn how process synchronization is done using semaphores.

1. Write programs using the following system calls of UNIX operating system:
   fork, exec, getpid, exit, wait, close, stat, opendir, readdir
   Write programs using the I/O system calls of UNIX operating system (open, read, write, etc)

2. Shell Programming
   Loops
   Patterns
   Expansions
   Substitutions

3. Write C programs to simulate UNIX commands like ls, grep, etc.

4. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS and SJF. For each of the scheduling policies, compute and print the average waiting time and average turnaround time. (2 sessions)

5. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Priority and Round robin. For each of the scheduling policies, compute and print the average waiting time and average turnaround time. (2 sessions)

6. Developing Application using Inter Process Communication (using shared memory, pipes or message queues)


8. Implement some memory management schemes – I

9. Implement some memory management schemes – II

10. Implement any file allocation technique (Linked, Indexed or Contiguous)
COMMUNICATION SYLLABUS

AIM:
To improve the listening capacity and to increase word power and also aimed to explore their problem solving ability.

OBJECTIVES:
To indulge students in self—disciplining themselves through this course
To focus on reading and listening skills through audio and video sessions. To educate arithmetic, logical and reasoning ability problems.

LEVEL – 1: 5 S
Seiri
Seiton
Seiso
Seiketsu
Shitsuke
Implementing 5-S concept inside the class room and marks will be awarded based on their regular 5-S performance.

LEVEL – 2: VOCABULARY
News paper word collections
GRE words Technical
Vocabularies Jumbled word games*
Creating own „Pocket-Dictionary” (Hand written)*
Each student must have their own Dictionary filled with hand written vocabularies to score credits

LEVEL – 3 : COMMENT THIS PICTURE
Out of the box answers are expected from students to induce the perception of a picture.

LEVEL – 4 : PERSONALITY’S – BIOGRAPHY
Life story of famous persons
Assignment*
Mini biography of a personality to be shared by every students and the copy of PPT should be mailed to sendbiography@gmail.com.

LEVEL – 5 : LISTENING TO CONVERSATION
Audio visual class
Audio track will be played on screen and dialogue sheet will be given to the students to fill the gaps by listen the audio.
APTITUDE SYLLABUS

PORTION – I
Clock, Calendar

PORTION – II
Time and work, Pipes and Cisterns

PORTION – III
Simple Interest, Compound Interest, Deriving Conclusion from Passage

PORTION – IV
Square root, Cube root, Puzzle test

TEXT BOOKS:
1. Dr.R.S.Aggarwal, “Quantitative Aplitude”, S.Chand & Company Limited, 2011(For Aptitude).
AIM:
To understand the concepts of object-oriented, event driven, and concurrent programming paradigms and to develop skills in using these paradigms in Java.

OBJECTIVES:
To understand the fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.,
To learn the concepts of Array, String and collections
To study the basics of generics and multithreading
To establish a firm foundation on core Java concepts such as Events, Exception, etc.,
To develop GUI Interfaces and to work with design frameworks

UNIT I  INTRODUCTION

UNIT II  PACKAGES AND COLLECTIONS

UNIT III GENERIC PROGRAMMING AND MULTITHREADING

UNIT IV EVENT AND EXCEPTION HANDLING

UNIT V JAVAFX AND DESIGN PATTERNS
Introduction to JAVAFX – Controls – Menus – Introduction to Design patterns – types – MVC design pattern – implementation – Frameworks
TEXT BOOK:


REFERENCE BOOKS:

AIM:
To understand the basic principles of open source software and learn to process software
development such as bug reporting, patching code, developing tools.

OBJECTIVE:
To provide exposure in FOSS and to develop open source software foe society

UNIT I PHILOSOPHY
Linux, GNU and Freedom, Brief history of GNU, Licensing free software –GPL and copy Left,
trends and potential- global and Indian, overview and usage of various Linux distributions- user
friendliness perspective –scientific perspective

UNIT II SYSTEM ADMINISTRATION
GNU and Linux installation –Boot process, commands Using bash features, The man pages, files
and file systems, file security, partitions, processes, Managing processes, I/O redirection,
Graphical environment, installing software, Backup techniques

UNIT III FOSS PROGRAMMING PRACTICES
GNU debugging tools, using source code versioning and managing tools, Review of common
programming practices and guidelines for GNU/Linux and FOSS, Documentation

UNIT IV PROGRAMMING TECHNIQUES
Application programming –Basics of X Windows server architecture –QT programming –GTK +
programming-Python programming –open source equivalent of existing commercial software

UNIT V PROJECTS AND CASE STUDIES
Linux for portable Devices, Creation of Bootable CD and USB from Command line, Case studies-
Samba, Libreoffice, Assistive technology

TOTAL: 45

TEXT BOOK:
OPeilly media, September 2009.
REFERENCES:

1. Philosophy of GNU URL: http://www.gnu.org/Philosophy/
4. Linux: Rute’s User tutorial and exposition, URL: http://rute.2038bug.com/index.html.gz
6. SVN Version control, URL: http://svnbook.red-bean.com/
Python Tutorial, Guido van Rossum, Fred L. Drake Jr., Editor. URL: http://www.python.org/doc/current/tut/tut.html
8. Doug Abbot, Linux for Embedded and Real time applications, Newnes
9. Case study SAMBA URL: http://www.samba.org/
AIM:

To introduce the concepts, terminologies and technologies used in modern days Data Communication and Computer Networking.

OBJECTIVE:

At the end of this course the student will be able to trace the flow of information from one node to another node in the network
Identify the component required to build different types of networks
Understand the division of network functionalities into layer
Identify solution for each functionality at each layer
Choose the required functionality at each layer for given application

UNIT I  FUNDAMENTALS


UNIT II  TRANSPORT LAYER

Overview of transport layer-UDP-TCP-Reliable byte stream-connection management –flow control-Retransmission-congestion control-congestion avoidance

UNIT III  NETWORK AND ROUTING


UNIT IV  DATA LINK LAYER AND LAN

Link layer services- Framing- Error control - flow control-Media access control-Ethernet-CSMA/CD-Token ring-FDDI-wireless LANs-CSMA/CA

UNIT V  DATA COMMUNICATION

Signal characteristics- Data transmission –physical links and transmission media- Signal encoding techniques- channel access techniques- TDM- FDM

TOTAL:45
**TEXT BOOKS:**


**REFERENCE BOOK:**

AIM:

The course introduces the students to the basic concept of object oriented analysis and design.

OBJECTIVES:

To learn basic OO analysis and design skills through an elaborate case study.
To use the UML design diagrams
To apply the appropriate design patterns

UNIT I FUNDAMENTALS


UNIT II OBJECT ORIENTED METHODOLOGIES


UNIT III OBJECT ORIENTED ANALYSIS

Identifying use cases – Identifying Tentative classes – Identifying Classes and their Behaviors using SCM -Identifying object relationships – Attributes and methods.

UNIT IV OBJECT ORIENTED DESIGN


UNIT V SOFTWARE QUALITY AND USABILITY


TOTAL : 45
TEXT BOOKS:

REFERENCE BOOKS:
AIM:
The course exposes the students to the essentials of building enterprise applications.

OBJECTIVE:

To familiarize with concept of Enterprise Analysis and Business Modeling.
To understand requirements validation, planning and estimation.
To design and document the application architecture.
To understand the importance of application framework and designing other application components.
To construct and develop different solution layers.
To perform Code review, Code analysis, build process

UNIT I INTRODUCTION
Introduction to enterprise applications and their types, software engineering methodologies, life cycle of raising an enterprise application, introduction to skills required to build an enterprise application, key determinants of successful enterprise applications, and measuring the success of enterprise applications

UNIT II MODELING
Inception of enterprise applications, enterprise analysis, business modeling, requirements elicitation, use case modeling, prototyping, non functional requirements, requirements validation, planning and estimation

UNIT III ARCHITECTURE
Concept of architecture, views and viewpoints, enterprise architecture, logical architecture, technical architecture- design, different technical layers, best practices, data architecture and design – relational, XML, and other structured data representations, Infrastructure architecture and design elements - Networking, Internetworking, and Communication Protocols, IT Hardware and Software, Middleware, Policies for Infrastructure Management, Deployment Strategy, Documentation of application architecture and design

UNIT IV CONSTRUCTION
Construction readiness of enterprise applications - defining a construction plan, defining a package structure, setting up a configuration management plan, setting up a development environment, introduction to the concept of Software Construction Maps, construction of technical solutions layers, methodologies of code review, static code analysis, build and testing, dynamic code analysis – code profiling and code coverage.
UNIT V TESTING

Types and methods of testing an enterprise application, testing levels and approaches, testing environments, integration testing, performance testing, penetration testing, usability testing, globalization testing and interface testing, user acceptance testing, rolling out an enterprise application.

TOTAL: 45

TEXT BOOKS:


REFERENCE BOOKS:

AIM:
The aim of this course is to make the students understand the fundamental concepts of digital signal processing.

OBJECTIVES:

- Ability to apply knowledge of analyzing the signals
- Ability to determine the Fourier Transform of Discrete time signals
- To Know well about sampling methods and DFT
- Ability to design the digital filters

UNIT I SIGNALS AND SYSTEMS

Representation of signals, Elementary of signals – Pulse, Step, Ramp, Impulse, Exponential. Classification of Continuous Time(CT) and Discrete Time(DT) signals – periodic and aperiodic, even and odd, energy and power, deterministic and random, exponential signals. Operation on signals, CT & DT systems, properties of systems – memory systems, linearity, time invariance, causality, stability, invertibility.

UNIT II SAMPLING THEOREM AND ANALYSIS OF DISCRETE TIME SIGNALS

Representation of CT signals by its sample – Sampling theorem – Reconstruction of a signal from its samples, aliasing, Nyquist rate and interval- sampling methods- impulse, natural and flat top sampling – Discrete Time Fourier Transform (DTFT) and analysis – properties

UNIT III FAST FOURIER TRANSFORMS


UNIT IV DIGITAL FILTER DESIGN

FIR Filters: Linear phase FIR filter -Windowing technique -Rectangular, Hamming, Hanning windows , Realization- Direct, Cascade and Transposed Forms.

UNIT V FINITE WORD LENGTH EFFECTS

Quantization noise – derivation for quantization noise power – Fixed point and binary floating point number representation, comparison – over flow error – truncation error – rounding error – coefficient quantization error - limit cycle oscillation – Application of DSP – Model of Speech Wave Form, Vocoder and Subband coding.

TOTAL : 60

TEXT BOOKS:


REFERENCE BOOKS:

AIM:

To introduce students to programming fundamentals of Java which provides a suitable basis for many Java – based applications.

OBJECTIVES:

To understand the fundamentals and basic concepts of Java programming
To enable the students to develop Java based applications
To apply the general programming constructs to Java environment
To apply the object oriented development concepts in Java

1. Develop a Java package with simple Stack and Queue classes. Use JavaDoc comments for documentation.
2. Design a class for Complex numbers in Java. In addition to methods for basic operations on complex numbers, provide a method to return the number of active objects created.

3. Design a Date class similar to the one provided in the java.util package.
4. Develop with suitable hierarchy, classes for Point, Shape, Rectangle, Square, Circle, Ellipse, Triangle, Polygon, etc. Design a simple test application to demonstrate dynamic polymorphism.
5. Design a Java interface for ADT Stack. Develop two different classes that implement this interface, one using array and the other using linked-list. Provide necessary exception handling in both the implementations.
6. Write a Java program to read a file that contains DNA sequences of arbitrary length one per line (note that each DNA sequence is just a String). Your program should sort the sequences in descending order with respect to the number of 'TATA' subsequences present. Finally write the sequences in sorted order into another file.
7. Develop a simple paint-like program that can draw basic graphical primitives in different dimensions and colors. Use appropriate menu and buttons.
8. Develop a scientific calculator using event-driven programming paradigm of Java.
9. Develop a template for linked-list class along with its methods in Java.
10. Design a thread-safe implementation of Queue class. Write a multi-threaded producer-consumer application that uses this Queue class.
AIM:

To help the students practice the general software engineering methodologies in the object-oriented development of applications.

OBJECTIVES:

To understand the fundamentals and basic concepts of Software Engineering
To enable the students to develop creative applications
To practice the object-oriented software development methodologies
To be aware of the database management techniques while developing applications

1. Prepare the following documents for two or three of the experiments listed below and develop the software engineering methodology.
2. Program Analysis and Project Planning.
   Thorough study of the problem – Identify project scope, Objectives, Infrastructure.
3. Software requirement Analysis
   Describe the individual Phases / Modules of the project, Identify deliverables.
4. Data Modeling
   Use work products – Data dictionary, Use diagrams and activity diagrams, Build and test class diagrams, Sequence diagrams and add interface to class diagrams.
5. Software Development and Debugging
6. Software Testing
   Prepare test plan, perform validation testing, Coverage analysis, memory leaks, develop test case hierarchy, Site check and Site monitor.

SUGGESTED LIST OF APPLICATIONS:

1. Student Marks Analyzing System
2. Banking System
3. ATM System
4. Online Ticket Reservation System
5. Payroll Processing System
6. Course Registration System
7. Library Management System
AIM:

The aim of this course is to provide practical coverage of the fundamentals of digital signal processing.

OBJECTIVES:

To understand the algorithms involved in digital signal processing
To enable the students to apply and model the concepts in microprocessors and signal processors
To help the students in the realization of various algorithms

1. Generation of signals
2. Operation on signals
3. Frequency response of LTI System
4. Verification of sampling theorem
5. Upsampling and Downsampling
6. Calculation of DFT
7. Linear and Circular Convolution
8. Implementation of overlap save and overlap add methods
9. Design of FIR filters using windows
10. Design of IIR filters using Butterworth filter
AIM:
To envisage corporate culture and improve aptitude skills.

OBJECTIVES:
To improve English fluency
To educate arithmetic, logical and reasoning ability problems

LEVEL – 1 MIME
Non verbal communication assessment students will be awarded marks based on their expressions and body language.

LEVEL – 2 ENGLISH ORATORY
Eg., Inaugural Address
Celebration Speeches
Patriotic Speech, etc.,

LEVEL – 3 GROUP DISCUSSION
Collaborative Learning Technique
Brain Storming
Case Studies

LEVEL – 4 SHORT FILM
Audio Visual Class
Pronunciation and Voice Modulation can be gained through this English short movie

LEVEL – 5 RESUME PREPARATION

APTITUDE SYLLABUS

PORTION 1
Boats & Streams, Statement - Assumptions

PORTION 2
Alligation or Mixture, Statement - Conclusions

PORTION 3
Logarithms, Permutation & Combination
PORTION 4

Heights and Distance, Cause and Effect Reasoning

TEXT BOOKS:

1. Dr.R.S.Aggarwal, “Quantitative Aptitude”, S.Chand & Company Limited, 2011 (For Aptitude)
AIM:
To provide an insight to the area of mathematics known as discrete mathematics and apply it to special applications such as coding and cryptography.

OBJECTIVES:
To obtain general knowledge about the area of discrete mathematics
To understand a variety of methods and to construct mathematical proofs
To model situations in a mathematical way and derive useful results

UNIT I PROPOSITIONAL CALCULUS

UNIT II PREDICATE CALCULUS

UNIT III SET THEORY

UNIT IV FUNCTIONS
Definitions of functions – Classification of functions – Type of functions - Examples – Composition of functions – Inverse functions – Binary and n-ary operations – Characteristic function of a set – Hashing functions – Recursive functions – Permutation functions.

UNIT V GROUPS
TEXT BOOKS:


REFERENCE BOOKS:

AIM:
To provide an introduction to Java and basic Web concepts and enable the student to create simple Web based applications.

OBJECTIVES:
To introduce the basic Web developing concepts
To understand the Java web programming concepts
To create simple Web pages and provide client side validation
To create dynamic web pages using server side scripting

UNIT I INTRODUCTION WEB SERVICES
Web services architecture – overview of web services – service oriented roles and architecture – architectural process – three tier web based architecture

UNIT II XML

UNIT III CLIENT SIDE PROGRAMMING
Client Tier using HTML – Basic HTML tags – Look and feel using CSS – Client side scripting using Java Script and Validations - Document Object Model (DOM)

UNIT IV JAVA - SERVER SIDE PROGRAMMING
Presentation tier using JSP – Role of Java EE in Enterprise applications – Internationalization – Basics of Servlets - To introduce server side programming with JSP

UNIT V BUILDING WEB APPLICATIONS
Building Web applications - cookies – sessions – open source environment – PHP

TOTAL : 45

TEXT BOOKS:
REFERENCE BOOKS:

AIM:

To introduce students to the concepts underlying the design and implementation of various compilers.

OBJECTIVES:

To design the front end of the compiler, scanner, parser, intermediate code generator, object code generator, and the parallel compilation strategies

UNIT I LEXICAL ANALYSIS

Introduction to compiler- compilers-Analysis of the Source Program-The phases of compiler –compiler construction tools-Lexical analyzer-input buffering-specification of tokens-Recognition of tokens-A language for specifying lexical analyzer

UNIT II SYNTAX ANALYSIS AND RUN-TIME ENVIRONMENTS


UNIT III INTERMEDIATE CODE GENERATION

Intermediate languages-Declarations-Assignment statements-Boolean expressions-flow of Control statements-Back patching-Procedure calls

UNIT IV CODE GENERATION

Issues in the design of a code generator-Target machine –Run-time storage management – Basic block and flow graphs-Next-use information –Simple code generator-Register allocation and assignment- The DAG representation of basic blocks- Generating code from DAGs

UNIT V CODE OPTIMIZATION


TOTAL:45

TEXT BOOK:

REFERENCE BOOKS:

The purpose of this course is to provide understanding of the need for data warehousing and to realize the importance of good mining techniques.

OBJECTIVES:
To introduce the theoretical background of the data mining functionalities
To emphasize on the practical issues in designing and implementing data warehouse
To introduce the mining in World Wide Web

UNIT I DATA WAREHOUSING
Data Warehousing: Data Warehousing Components-building a Data Warehouse-Mapping the Data Warehouse to a Multiprocessor Architecture-DBMS Scheme for Decision Support-Metadata-Online analytical processing(OLAP)-OLAP and Multidimensional Data Analysis.

UNIT II DATA MINING
Data Mining: Data Mining-Functionalities-Data Preprocessing-Data Cleaning-Data Integration and Transformation-Data Reduction-Data Discretization

UNIT III CLASSIFICATION AND PREDICTION
Classification and Prediction: Issues Regarding Classification and Prediction-Classification by Decision Tree Induction-Bayesian Classification-Rule Based Classification –Classification by Back propagation-Prediction-Accuracy and Error Measures-Evaluating the Accuracy of a Classifier or Predictor

UNIT IV CLUSTERING AND PARTITIONING
Cluster Analysis: Types of Data in Cluster Analysis-Clustering Methods: Partitioning Methods-Hierarchical Methods, Outlier Analysis

UNIT V APPLICATIONS AND TRENDS IN DATA MINING

TOTAL: 45

TEXT BOOK:
REFERENCE BOOKS:


AIM:
To give a comprehensive exposure to the developments taking place in the areas of wireless networks and computing

OBJECTIVES:
To impart the fundamental concepts of mobile communication systems.
To understand the issues relating to wireless applications.
To learn the working principles of Wireless LAN standards and Wireless Application Protocols.

UNIT I WIRELESS COMMUNICATION FUNDAMENTALS

UNIT II WIRELESS TELECOMMUNICATION NETWORKS

UNIT III WIRELESS LAN

UNIT IV MOBILE NETWORK LAYER

UNIT V TRANSPORT AND APPLICATION LAYERS

TOTAL: 45
TEXT BOOK:


REFERENCE BOOKS:

**AIM:**

To understand the basic principles of open source software and learn to work in different open source platforms.

**OBJECTIVES:**

To practice the installation of various open source softwares in different modes
To learn to program simple applications in PHP
To learn to successfully build Interfaces using IDEs
To establish a firm foundation in NS2 simulator

1. GNU/Linux OS installation (provide details of how to detect, configure disk partitions & file system and successfully install a GNU/Linux distribution)

2. Basic shell commands – logging in, listing files, editing files, copying/moving files, viewing file contents, changing file modes and permissions, process managements

3. User and group management, file ownerships and permissions, PAM authentication, Introduction to common system configuration files & log files.

4. Configuring networking, basics of TCP/IP networking and routing, connection to the internet (through dialup, DSL, Ethernet, leased line)

5. Performing everyday tasks using GNU/Linux-accessing the internet, playing music, editing documents and spreadsheets, sending and receiving email, copy files from disks and over the network, playing games, writing CDs.

6. Setting up web servers – using apache (for HTTP services), setting up proxy services, printer services, firewall. Using the GNU compiler collection – getting acquainted with the GNU compiler tools-the C preprocessor (cpp), the C compiler (gcc) and the c++ compiler (g++), and the assembler (gas)

7. Python Programming

8. QT Programming

9. GTK Programming

10. PHP & MYSQL Connectivity
AIM:
To enable the students to program in Java and to create simple Web based applications.

OBJECTIVES:

To design a simple web page using HTML.
To write simple programs using VB Script and JAVA script.
    To create simple Web pages and provide client side validation.
    To create dynamic web pages using server side scripting.

1. Creation of simple HTML5 pages with divisions, links, tables, canvas and other tags.
2. Client Side Programming.
   a. Javascript for displaying date and comparing two dates.
   b. Form validation including textfield, radio buttons, checkboxes, listbox and other controls
   c. Jquery Exercises, AJAX
3. XML - DTD
4. XML - XSL
5. Webpage – CSS3, Stylesheet Inclusion Techniques
6. Active Server Pages
7. Java Server Pages – Request, Session, Implicit Objects
8. Java Servlets
9. Sample web application development in the open source environment.
AIM:

The aim of this laboratory is to make the students to be exposed to compiler writing tools, to implement the different phases of compiler, to be familiar with control flow and data flow analysis and to learn simple optimization techniques.

OBJECTIVES:

Implement the different Phases of compiler using tools
   Analyze the control flow and data flow of a typical program
   Optimize a given program
   Generate an assembly language program equivalent to a source language program

1. Implementation of Symbol Table
2. Develop a lexical analyzer to recognize a few patterns in C. (Ex. identifiers, constants, comments, operators etc.)
3. Implementation of Lexical Analyzer using Lex Tool
4. Generate YACC specification for a few syntactic categories.
   a) Program to recognize a valid arithmetic expression that uses operator +, -, *, and /.
   b) Program to recognize a valid variable which starts with a letter followed by any number of letters or digits.
   c) Implementation of Calculator using LEX and YACC
5. Convert the BNF rules into Yacc form and write code to generate Abstract Syntax Tree.
6. Implement type checking
7. Implement control flow analysis and Data flow Analysis
8. Implement any one storage allocation strategies(Heap, Stack, Static)
9. Construction of DAG
10. Implement the back end of the compiler which takes the three address code and produces the 8086 assembly language instructions that can be assembled and run using a 8086 assembler. The target assembly instructions can be simple move, add, sub, jump. Also simple addressing modes are used.
11. Implementation of Simple Code Optimization Techniques (Constant Folding., etc.)
AIM:
To meet industrial expectation & to develop problem solving skills.

OBJECTIVES:
To improve the quality of student’s communication with practical experience
To impart basic skills on arithmetic, logical and reasoning ability

LEVEL – 1 QUIZ

Current Affairs
Who am I?
Logo Identification
Individual cum Team based activity to brush up their general awareness

LEVEL – 2 DEBATE

Socio – Economic problems
Government Policies
General Issues etc.,

LEVEL – 3 VIDEOGRAPHY

Speech Recording
Video recording of student’s speech will be shown to them to rectify their own mistakes and also to improve body language and eye contact

LEVEL – 4 PROFILE PRESENTATION

Company Profile (Power Point Presentation)
Seminar Day *

* Every student must prepare PPT about famous industries to present during seminar day.

LEVEL – 5 INTERVIEW

APTITUDE SYLLABUS

Problems on Trains  Time and Distance  Height and Distance
Time and Work  Simple Interest  Compound Interest
Profit and Loss  Partnership  Percentage
Problems on Ages  Calendar  Clock
Average  Area  Volume and Surface Area
Permutation and Combination  Numbers  Problems on Numbers
Problems on H.C.F and L.C.M  Decimal Fraction  Simplification
Square Root and Cube Root  Probability  Ratio and Proportion
Chain Rule  Pipes and Cistern  Boats and Streams
Alligation or Mixture  Logarithm  Odd Man Out and Series

Logical questions, Verbal & Non Verbal Reasoning questions, General company questions

TEXT BOOKS:

3. Dr.R.S.Aggarwal, “Quantitative Aptitude”, S.Chand & Company Limited, 2011 (For Aptitude)

**AIM:**

The aim of this course is to give students a comprehensive understanding of Artificial Intelligence, developing computer applications, which encompasses perception, reasoning, learning and to provide an in-depth understanding of major techniques used to simulate intelligence.

**OBJECTIVES:**

- To provide a strong foundation of fundamental concepts in Artificial Intelligence
- To provide a basic exposition to the goals and methods of Artificial Intelligence
- To describe the logical languages and apply it for knowledge representation.
- To outline the importance of learning agent and the forms of learning.
- To Design of communicative agent and its usage in domains.

**UNIT I INTRODUCTION**


**UNIT II SEARCHING TECHNIQUES**


**UNIT III KNOWLEDGE REPRESENTATION**


**UNIT IV LEARNING**

UNIT V APPLICATIONS


TOTAL : 45

TEXT BOOK:


REFERENCE BOOKS:

AIM:

To cover the fundamental concepts of the C# language and the .Net Framework.

OBJECTIVES:

Understand the concept of .NET framework, study the different techniques of security, introduce web services with ASP.NET, and explore window based applications.

UNIT I  C# LANGUAGE BASICS  8
C# and the .NET framework- C# basics-Objects and types-Inheritance-Arrays-Operators and casts-Indexes

UNIT II C# ADVANCE FEATURES  9
Delegates and Events-Strings and regular expressions-Generics- Collections-Memory management and pointers-Errors and exceptions

UNIT III  BASE CLASS LIBRARIES AND DATA MANIPULATION  8
Tracing and events-Threading and synchronization-.NET security-Localization –Manipulating XML –Managing the file System –Basic network programming

UNIT IV  DATA BASE WEB SERVICES  8
Window based applications-Data access with .NET-basic of ASP.NET-Introduction to web services

UNIT V  .NET FRAMEWORK  12
Architecture –Assemblies-Shared assembling –CLR hosting- Appdomains-Reflection

TOTAL : 45

TEXT BOOKS:

REFERENCE BOOKS:


AIM:
To study different types of Cyber forensic technologies and enable the student to have a foundation in this emerging area.

OBJECTIVES:
To study the fundamentals of computer forensics
To have an overview of techniques for Data Recovery and Evidence Collection
To study various threats associated with security and information warfare
To study the tools and tactics associated with cyber forensics

UNIT I  INTRODUCTION TO COMPUTER FORENSICS
Computer Forensics Fundamentals – Types of Computer Forensics Technology
Types of Vendor and Computer Forensics Services
– Fighting against Macro Threats
– Information Warfare Arsenal
– Tactics of the Military
– Tactics of Terrorist and Rogues
– Tactics of Private Companies

UNIT II  RECOVERY AND EVIDENCES
Data Recovery – Evidence Collection and Data Seizure
– Duplication and Preservation of Digital Evidence
– Computer Image Verification and Authentication
– Discover of Electronic Evidence
– Identification of Data
– Reconstructing Past Events
– Networks

UNIT III  ETHICAL HACKING
Hacking windows – Network hacking – Web hacking – Password hacking.
A study on various attacks:
– Input validation attacks
– SQL injection attacks
– Buffer overflow attacks
– Privacy attacks

UNIT IV COMPUTER FRAUD
Fundamentals of Computer Fraud
– Threat concepts
– Framework for predicting inside attacks
– Managing the threat
– Architecture strategies for computer fraud prevention
– Protection of Web sites

UNIT V  INTRUSION DETECTION SYSTEM
Intrusion detection system
– The Future
– Arsenal
– Surveillance Tools
– Victims and Refugees
– Advanced Computer Forensics

TOTAL: 45
TEXTBOOKS:

REFERENCE BOOKS:
AIM:

The course introduces the students to the basic principles of pervasive computing.

OBJECTIVES:

To be aware of the concepts of pervasive computing
To have an exposure of pervasive computing and web based applications
To have an understanding of the middleware, PDA and user interface in pervasive computing

UNIT I PERSVASIVE COMPUTING APPLICATION 9

Pervasive Computing devices and Interfaces – Device technology trends, pervasive computing principles
Pervasive computing infrastructure-applications- Device Technology - Hardware, Human-machine Interfaces, Biometrics, and Operating systems– Device Connectivity – Protocols, Security, and Device Management- Pervasive Web Application architecture

UNIT II PERSVASIVE COMPUTING AND WEB BASED APPLICATIONS 9


UNIT III MIDDLEWARE COMPONENTS 9

Programming consumer devices, Smart card programming, messaging components, Database components

UNIT IV PDA IN PERSVASIVE COMPUTING 9

Introduction - PDA software Components, Standards, emerging trends – PDA Device characteristics - PDA Based Access Architecture

UNIT V USER INTERFACE ISSUES IN PERSVASIVE COMPUTING 9

Architecture - Smart Card- based Authentication Mechanisms – Wearable computing Architecture

TOTAL : 45
TEXT BOOKS:


REFERENCE BOOKS:

AIM:
To understand the kernel, I/O and files, process control, scheduling and memory management policies in Unix.

OBJECTIVES:
To get through understanding of the kernel
To understand the file organization and management.
To know the various system calls
To have knowledge of process architecture, process control & scheduling and memory management.

UNIT I INTRODUCTION

UNIT II THE BUFFER CACHE
The Buffer Cache-Headers-Buffer Pool-Buffer Retrieval-Reading and Writing Disk Blocks - Advantages and Disadvantages. Internal Representation of Files-Inodes-Structure-Directories-Path Name to Inode- Super Block-Inode Assignment-Allocation of Disk Blocks-OtherFileTypes.

UNIT III SYSTEM CALLS FOR FILE SYSTEM

UNIT IV STRUCTURE OF PROCESSES

UNIT V PROCESS SCHEDULING AND MEMORY MANAGEMENT TECHNIQUES
Memory Management Policies-Swapping-Demand Paging-a Hybrid System-I/O Subsystem-Driver Interfaces-Disk Drivers-Terminal Drivers.

TOTAL:45
TEXT BOOK:


REFERENCE BOOKS:

AIM:
To expose the students to the different business strategies involving electronic commerce which to be used in business in a global environment.

OBJECTIVES:
To learn the advancements of electronic commerce which has become a compelling necessity in the present day communication based commerce.
To understood the key issues involved in managing electronic commerce initiatives.

UNIT I TELECOMMUNICATION NETWORKS

UNIT II THE INTERNET AND THE WORLD WIDE WEB

UNIT III ELECTRONIC PAYMENT SYSTEMS

UNIT IV E – SECURITY

UNIT V WEB BASED BUSINESS

TOTAL : 45
REFERENCE BOOKS:

AIM:
This course will provide the student with the underlying principles and basic concepts of Intellectual property rights.

OBJECTIVES:
To provide insight on latest technology trends, patents, copyright, strategies, intellectual property laws, types of intellectual property rights.
To allow the students to develop their own framework for analyzing and understanding IPR.

UNIT I BASICS OF IPR

UNIT II PATENTED INVENTION AND ADMINISTRATION

UNIT III TRADE MARK
Concept, purpose ,characteristics and functions of trademark- Trademark act- Trade secret-Guidelines for Registration of Trademark- Registration procedure- NICE Classification- Sales, transfer and Licensing of Trademark

UNIT IV COPYRIGHTS AND RELATED ISSUES
Concept of copyright- Copyright and geographical indications- Works protected and not protected by copyright- India copyright law- Rights conferred by copyright- Copyright infringement-Computer program and database copyright- Registration of copyright in India-Copyright in digital era.

UNIT V APPLICATIONS

TOTAL : 45
REFERENCE BOOKS:

AIM:

This course will provide the student with the underlying principles and techniques of Total Quality Management (TQM) with emphasis on their application to technical organizations.

OBJECTIVES:

To help students to develop a working knowledge of the best practices in Quality and Process Management.
To impart knowledge on the quality management process and key quality management activities.

UNIT I INTRODUCTION TO QUALITY MANAGEMENT

Basic concepts of TQM -Definition of TQM – TQM Framework- reasons for adopting TQM. Benefits, Quality-vision, mission and policy statements. , Historical Review, Principles of TQM, Barriers to TQM implementation-Dimensions of product and services, cost of quality

UNIT II TQM PRINCIPLES AND PHILOSOPHIES


UNIT III STATISTICAL PROCESS CONTROL (SPC)

The seven tools of quality- Overview of statistical process control -New seven management tools- Process capability-meaning, significance and measurement – Six-sigma: Concepts, methodology, applications to manufacturing, service sector including IT industries.

UNIT IV TQM TOOLS AND TECHNIQUES

Bench marking –Reason to bench mark, bench mark process –FEMA –Stages ,types ,Business process re-engineering(BPR)-Principles, applications and process. Total Productivity Maintenance TPM)

UNIT V QUALITY SYSTEMS


TOTAL : 45
TEXT BOOKS:


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## SEMESTER VIII

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AIM:
To learn about wired and wireless network security with various cryptographic techniques, which include private and public keys algorithms along with attacks types.

OBJECTIVES:
- Understand OSI security architecture and classical encryption techniques.
- Acquire fundamental knowledge on the concepts of finite fields and number theory.
- Understand various block cipher and stream cipher models.
- Describe the principles of public key cryptosystems, hash functions and digital signature.

UNIT I INTRODUCTION & NUMBER THEORY
10
Services, Mechanisms and attacks–the OSI security architecture–Network security model–Classical Encryption techniques (Symmetric cipher model, substitution techniques, transposition techniques, steganography).

UNIT II BLOCK CIPHERS & PUBLIC KEY CRYPTOGRAPHY
10

UNIT III HASH FUNCTIONS AND DIGITAL SIGNATURES
8

UNIT IV SECURITY PRACTICE & SYSTEM SECURITY
8

UNIT V E-MAIL, IP & WEB SECURITY
9
E-mail Security: Security Services for E-mail-attacks possible through E-mail - establishing keys privacy-authentication of the source–Message Integrity-Non-repudiation-Pretty Good Privacy-S/MIME.

TOTAL: 45 PERIODS

TEXT BOOKS:


REFERENCES:

AIM:
To explore the range of technologies that shape this world, investigate the next generation of devices and interfaces, and explore how these might shape the applications and entertainment of the future.

OBJECTIVES:

- To develop, design and implement two and three dimensional graphical structures
- To enable students to acquire knowledge on Multimedia compression and animations
- To learn Creation, Management and Transmission of Multimedia objects

UNIT – I INTRODUCTION AND QOS

QOS Requirements and Constraints - Concepts – Resources - Establishment Phase – Run-Time Phase - Management Architectures

UNIT – II OPERATING SYSTEMS


UNIT – III FILE SYSTEMS AND NETWORKS

Traditional and Multimedia File Systems-Caching Policy-Batching-Piggy backing-Ethernet-Gigabit Ethernet-Token Ring-100VG Any LAN-Fiber Distributed Data Interface (FDDI)- ATM Networks-MANWAN.

UNIT – IV COMMUNICATION


UNIT – V SYNCHRONIZATION

Synchronization in Multimedia Systems-Presentation-Synchronization Types-Multimedia Synchronization Methods-Case Studies-MHEG-MODE-ACME.

TOTAL: 45
REFERENCES:

2. Ralf Steinmetz and Klara Nahrstedt, Media Coding and Content Processing, Prentice hall, 2002

AIM:
To provide students with skills and knowledge critical to the successful testing of software.

OBJECTIVES:
- Expose the criteria for test cases.
- Learn the design of test cases.
- Be familiar with test management and test automation techniques.
- Be exposed to test metrics and measurements.

UNIT I INTRODUCTION

UNIT II TEST CASE DESIGN

UNIT III LEVELS OF TESTING

UNIT IV TEST AMANAGEMENT

UNIT V TEST AUTOMATION
TEXT BOOKS:


REFERENCES:

AIM:

To make the students to be familiar with the basic concepts of Mobile Communication and Mobile devices.

OBJECTIVES:

• To know the components and structure of mobile application development frameworks for Android and Windows OD based mobiles
• To understand how to work with various mobile application development frameworks
• To learn the basic and important design concepts and issues in development of mobile applications
• To understand the capabilities and limitations of mobile devices

1. Develop an application that uses GUI components, Font and Colours
2. Develop an application that uses Layout Managers and event listeners.
3. Develop a native calculator application.
4. Write an application that draws basic graphical primitives on the screen.
5. Develop an application that makes use of database.
6. Develop an application that makes use of RSS Feed.
7. Implement an application that implements Multi threading
8. Develop a native application that uses GPS location information.
9. Implement an application that writes data to the SD card.
10. Implement an application that creates an alert upon receiving a message.
11. Write a mobile application that creates alarm clock
AIM:

To acquire knowledge on multimedia concepts using various tools in Adobe Photoshop and Macromedia Flash.

OBJECTIVES:

- To apply and display the transformations in the output for various multimedia concepts
- To gain knowledge on the resources and tools of Photoshop and Flash
- To have hands on training in various tools in Adobe Photoshop and Flash
- To emphasize on the practical issues in designing using multimedia concepts

PHOTOSHOP

1. Perform Copy, Cut, Paste, Move functions using Selection tools.
3. Refine the picture and perform Invert selection using Quick Select Tool (or Magic Wand Tool).
4. Format several layers of a picture using Paint Bucket Tool, Color Picker, Brush Tool.
5. Use Layers and Eraser Tool in a picture.
6. Use Text Tool to add text to the speech bubbles and Use the Transform function and the Move Tool in cartoons.
7. Perform selection type and color balance using selection tools on a picture.
8. Use crop and canvas tool in a picture.
9. Use Clone stamp tool and smudge tool in a picture.
10. Use filters in a picture.

FLASH

1. Perform motion tweening
2. Create a 24 spokes on a wheel
3. Change and shape an object using a shape tweening concept
4. Working on layers
5. Masking layers
AIM:
To introduce students to the theory, architecture, protocols and techniques in wireless and mobile networks.

OBJECTIVES:
- To introduce students to the mathematical models and network protocol designs in wireless networks
- To provide a systematic exposition of network protocols and their cross-layer interactions
- To provide a broad perspective on the active research areas in wireless adhoc networks

UNIT I INTRODUCTION

UNIT II AD HOC ROUTING PROTOCOLS

UNIT III TRANSPORT LAYER AND SECURITY PROTOCOLS

UNIT IV QUALITY OF SERVICE

TOTAL: 45 HOURS

TEXT BOOK:


REFERENCE BOOKS:

AIM:
To be able to critically evaluate nanoscience concepts and therefore be equipped to delve deeper into nano science research.

OBJECTIVES:
- To demonstrate understanding techniques of microscopy for investigations on the nanoscale
- To acquire knowledge of basic approaches to synthesize inorganic colloidal nanoparticles and their self-assembly in solution and surfaces
- To understand and describe the use of unique optical properties of nanoscale metallic structures for analytical and biological applications

UNIT I INTRODUCTION
Nanoscale Science and Technology- Implications for Physics, Chemistry, Biology and Engineering- Classifications of nanostructured materials- nano particles- quantum dots, nanowires-ultra-thinfilms-multilayered materials. Length Scales involved and effect on properties: Mechanical, Electronic, Optical, Magnetic and Thermal properties. Introduction to properties and motivation for study (qualitative only).

UNIT II PREPARATION METHODS
Bottom-up Synthesis-Top-down Approach: Precipitation, Mechanical Milling, Colloidal routes, Self-assembly, Vapour phase deposition, MOCVD, Sputtering, Evaporation, Molecular Beam Epitaxy, Atomic Layer Epitaxy, MOMBE.

UNIT III PATTERNING AND LITHOGRAPHY FOR NANOSCALE DEVICES
Introduction to optical/UV electron beam and X-ray Lithography systems and processes, Wet etching, dry (Plasma /reactive ion) etching, Etch resists-dip pen lithography

UNIT IV PREPARATION ENVIRONMENTS
Clean rooms: specifications and design, air and water purity, requirements for particular processes, Vibration free environments: Services and facilities required. Working practices, sample cleaning, Chemical purification, chemical and biological contamination, Safety issues, flammable and toxic hazards, biohazards.

UNIT V CHARACTERISATION TECHNIQUES

TOTAL:45 HOURS
TEXTBOOKS:


REFERENCEBOOKS:

1. G Timp (Editor), Nanotechnology, AIP press/Springer, 1999
AIM:

The aim is to introduce the basics of grid computing and to enable designing of efficient grid services infrastructure.

OBJECTIVES:

- To introduce the basic concepts of grid computing
- To introduce the tools used for designing grid computing infrastructure
- To understand the advantages and limitations of distributed grid computing

UNIT I  INTRODUCTION AND OVERVIEW OF GRID COMPUTING

Early Grid Activities-Current Grid Activities-An Overview of Grid Business Areas-Grid Applications-Grid Infrastructure

UNIT II  WEB SERVICES AND RELATED TECHNOLOGIES


UNIT III  DISTRIBUTED OBJECT TECHNOLOGY FOR GRID COMPUTING (OGSA)

Introduction to Open Grid Services Architecture (OGSA) - Commercial Data Center- National Fusion Collaboratory- The OGSA Platform Components

UNIT IV  OPEN GRID SERVICES INFRASTRUCTURE (OGSI)


UNIT V  OGSA BASIC SERVICES AND THE GRID COMPUTING TOOLKITS


TOTAL: 45 HOURS
TEXT BOOK:

REFERENCE BOOK:

ONLINE REFERENCES
http://www.cs.uiowa.edu/~jni/GC/
The TeraGrid: http://www.teragrid.org
The NSF Middleware initiative: http://www.nsf-middleware.org
The Globus Project: http://www.globus.org
The Grid Portal Toolkit (Grid Port): http://www.gridport.net
The Open Grid Computing Environments Consortium: http://www.ogce.org
The GridSphere Project: http://www.gridsphere.org
IBM Grid Pages: http://www-1.ibm.com/grid/
University of Texas UT Grid: http://utgrid.utexas.edu
AIM:

To give an overview about the basics of security and cryptography and to give an exposure to the security and security practices used in IT industries.

OBJECTIVES:

- To learn the concepts and models of security
- To design and implement symmetric and asymmetric cryptosystems
- To elucidate various security standards followed at the network and application level
- To measure the security risk encountered by an organization and the techniques to handle the risk
- To learn the concepts of secured software development

UNIT I SECURITY – AN OVERVIEW


UNIT II CRYPTOGRAPHY


UNIT III SECURITY STANDARDS


UNIT IV SECURITY PRACTICES


UNIT V SECURE DEVELOPMENT

Secured Coding – OWASP/SANS Top Vulnerabilities – Buffer Overflows – Incomplete mediation – XSS – Anti Cross Site Scripting Libraries – Canonical Data Format – Command

TOTAL: 45 HOUR

TEXT BOOKS:


REFERENCE BOOKS:

OBJECTIVES:

- Learn the basics of socket programming using TCP Sockets.
- Learn about Socket Options.
- Learn to develop Macros for including Objects In MIB Structure.
- Understand SNMPv1, v2 and v3 protocols & practical issues.

UNIT I SOCKETS AND APPLICATION DEVELOPMENT

Introduction to Socket Programming - System Calls - Address conversion functions - POSIX Signal Handling - Server with multiple clients - Boundary conditions - Server process Crashes, Server host Crashes, Server Crashes and reboots, Server Shutdown - I/O Multiplexing - I/O Models -TCP echo client/server with I/O Multiplexing

UNIT II SOCKET OPTIONS

Socket options - getsockopt and setsockopt functions - Generic socket options - IP socket options - ICMP socket options - TCP socket options - Multiplexing TCP and UDP sockets - SCTP Sockets - SCTP Client/server - Streaming Example - Domain name system - gethostbyname, gethostbyaddr, getservbyname and getservbyport functions - Protocol Independent functions in TCP Client/Server Scenario

UNIT III ADVANCED SOCKETS

IPv4 and IPv6 interoperability - Threaded servers - Thread creation and termination - TCP echo server using threads - Mutex - Condition variables - Raw sockets - Raw socket creation - Raw socket output - Raw socket input - ping program - traceroute program

UNIT IV SIMPLE NETWORK MANAGEMENT


UNIT V SNMP V2, V3 AND RMO

Introduction to SNMPv2 - SMI for SNMPV2 - Protocol - SNMPv3 - Architecture and applications - Security and access control model - Overview of RMON.

TOTAL: 45 PERIODS

TEXT BOOKS:


REFERENCE:

AIM:

The course introduces the students to a range of topics in the field of artificial neural networks and to provide familiarity with the associated applications.

OBJECTIVES:

- To understand aspects of the social, intellectual, and neurobiological context of neural networks
- To have an understanding of a variety of neural network techniques
- To have an awareness of the computational theory underlying NNs

UNIT I INTRODUCTION

Definition of ANN-Biological Neural Networks-Applications of ANN-Typical Architectures-Setting the weights-Common Activation functions-Development of Neural Networks-McCulloch-Pitts Neuron

UNIT II SIMPLE NEURAL NETS FOR PATTERN CLASSIFICATION

General discussion - Hebb net – Perceptron- Adaline - Backpropagation neural net- Architecture- Delta Learning Rule Algorithm-Applications

UNIT III PATTERN ASSOCIATION

Training Algorithm for Pattern Association-Heteroassociative memory neural network applications-Autoassociative net-Iterative Autoassociative net- Bidirectional Associative Memory-Applications

UNIT IV NEURAL NETS BASED ON COMPETITION

Fixed Weights Competitive Nets- Kohonen’s Self-Organizing Map –Applications- Learning Vector Quantization-Applications-Counter Propagation Network- Applications.

UNIT V ADAPTIVE RESONANCE THEORY AND NEOCOGNITRON


TOTAL: 45 HOURS
TEXT BOOK:


REFERENCE BOOKS:

AIM:

The course introduces the students to Parallel programming paradigms and algorithms for shared and distributed memory computer architectures; performance analysis; use of shared infrastructure and applications in scientific computing.

OBJECTIVES:

- To be able to design for high – performance computing applications
- To learn the issues in designing parallelism
- To introduce the students to various cutting edge technologies in parallel computing

UNIT I SCALABILITY AND CLUSTERING


UNIT II ENABLING TECHNOLOGIES


UNIT III SYSTEM INTERCONNECT

Basics of Interconnection Networks – Network Topologies and Properties – Buses, Crossbar and Multistage Switches, Software Multithreading – Synchronization Mechanisms.

UNIT IV PARALLEL PROGRAMMING

Paradigms And Programmability – Parallel Programming Models – Shared Memory Programming.

UNIT V MESSAGE PASSING PROGRAMMING


TOTAL: 45 HOURS

TEXT BOOKS:

New Delhi, 2003.

REFERENCE BOOKS:

OBJECTIVES:

- Understand the basic tenets of software quality and quality factors.
- Be exposed to the Software Quality Assurance (SQA) architecture and the details of SQA components.
- Understand how the SQA components can be integrated into the project life cycle.
- Be familiar with the software quality infrastructure.
- Be exposed to the management components of software quality.

UNIT I INTRODUCTION TO SOFTWARE QUALITY & ARCHITECTURE


UNIT II SQA COMPONENTS AND PROJECT LIFE CYCLE


UNIT III SOFTWARE QUALITY INFRASTRUCTURE

Procedures and work instructions - Templates - Checklists – 3S developmenting - Staff training and certification Corrective and preventive actions – Configuration management – Software change control – Configuration management audit -Documentation control – Storage and retrieval.

UNIT IV SOFTWARE QUALITY MANAGEMENT & METRICS


UNIT V STANDARDS, CERTIFICATIONS & ASSESSMENTS


TOTAL : 45 PERIODS
TEXT BOOK:


REFERENCES:


OBJECTIVES:

- Understand various Computing models like Finite State Machine, Pushdown Automata, and Turing Machine.
- Be aware of Decidability and Un-decidability of various problems.
- Learn types of grammars

UNIT I FINITE AUTOMATA


UNIT II GRAMMARS


UNIT III PUSHDOWN AUTOMATA


UNIT IV TURING MACHINES

Definitions of Turing machines – Models – Computable languages and functions –Techniques for Turing machine construction – Multi head and Multi tape Turing Machines - The Halting problem – Partial Solvability – Problems about Turing machine- Chomskian hierarchy of languages.

UNIT V UNSOLVABLE PROBLEMS AND COMPUTABLE FUNCTIONS

Unsolvable Problems and Computable Functions – Primitive recursive functions – Recursive and recursively enumerable languages – Universal Turing machine. MEASURING AND CLASSIFYING COMPLEXITY: Tractable and Intractable problems- Tractable and possibly intractable problems - P and NP completeness - Polynomial time reductions.

TOTAL: 45 PERIODS
TEXT BOOKS:


REFERENCES:


AIM:

The course aims to provide students with knowledge of the theoretical foundations of human computer interaction; appreciation for human factors in software systems, and for what makes an interface good; and practice in designing user-centered interfaces.

OBJECTIVES:

- To provide in-depth understanding of the methods and techniques that can be utilized in the design, implementation and testing of user interfaces
- To develop critical capabilities that enable evaluation and selection of appropriate methods and techniques for interface design
- To engender practical abilities in visual and technical aspects of the design process

UNIT I INTRODUCTION


UNIT II HUMAN COMPUTER INTERACTIONS


UNIT III WINDOWS


UNIT IV MULTIMEDIA

Text for Web Pages – Providing Effective Feedback and Guidance and Assistance – Providing the Proper Feedback – Guidance and Assistance – International Considerations – Accessibility – Icons and Images – Multimedia – Coloring – Choosing the Proper Colors
Usability Test – Purpose and Importance – Scope of Testing – Prototypes – Kinds of Tests –
Developing and Conducting the Test – Analyze, Modify and Retest – Evaluation

TOTAL: 45 HOURS

TEXT BOOKS:
2. Deborah Mayhew, “The Usability Engineering Lifecycle”, Morgan Kaufmann, 1999

REFERENCE BOOKS:
AIM:
To understand the strategic importance of ERP in business process and how to create competitive advantage from managerial point of view.

OBJECTIVES:
- To understand the importance of Enterprise-wide systems to business operations
- To understand basic concepts, tools and techniques of Enterprise Resource Planning
- To understand issues of ERP architecture, design, development, implementation, and project management
- To gain exposure to enterprise software from SAP
- To understand the steps and activities in the ERP life cycle

UNIT I INTRODUCTION TO ERP
9

UNIT II ERP IMPLEMENTATION
9

UNIT III BUSINESS MODULES
9

UNIT IV ERP MARKET
9

UNIT V ERP – PRESENT AND FUTURE
9
Turbo Charge the ERP System – EIA – RP and E–Commerce – ERP and Internet – Future Directions in ERP.

TOTAL: 45 HOURS
TEXT BOOKS:


REFERENCE BOOKS:

AIM:
To learn the different principles and techniques of management in planning, organizing, directing and controlling.

OBJECTIVES:
- To study the evolution of Management
- To study the functions and principles of Management
- To learn the application of the principles in an organization

UNIT I INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS


UNIT II PLANNING

UNIT III ORGANISING & STAFFING

UNIT IV DIRECTING

UNIT V CONTROLLING
System and process of controlling – budgetary and non-budgetary control techniques – use of computers and IT in Management control – Productivity problems and management – control and performance – direct and preventive control - reporting
TOTAL: 45 HOURS

TEXT BOOKS:


REFERENCE BOOKS:

SEMINISTER VIII

UIT12801/UCS12801 CLOUD COMPUTING (Recommended by Infosys - Common to CSE & IT) 3 0 0 3

AIM:
To emphasize virtualized data centers and cloud systems for understanding, research.

OBJECTIVES:
- To introduce the broad perceptive of cloud architecture and model
- To understand the concept of Virtualization
- To be familiar with the lead players in cloud.
- To understand the features of cloud simulator
- To apply different cloud programming model as per need.
- To be able to set up a private cloud.
- To understand the design of cloud Services.
- To learn to design the trusted cloud Computing system

UNIT I UNDERSTANDING CLOUD COMPUTING

UNIT II DEVELOPING CLOUD SERVICES

UNIT III CLOUD COMPUTING FOR EVERYONE
Centralizing Email Communications – Collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud Computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation

UNIT IV USING CLOUD SERVICES
UNIT V OTHER WAYS TO COLLABORATE ONLINE


TOTAL: 45 HOURS

REFERENCES:


AIM:
To learn the fundamentals of data models and to conceptualize and depict a database system using ER diagram, make a study of SQL, know the fundamental concepts of transaction processing.

OBJECTIVES:
- Be familiar with a commercial relational database system (Oracle) by writing SQL using the system.
- Be familiar with the relational database theory, and be able to write relational algebra expressions for queries.

UNIT I PARALLEL AND DISTRIBUTED DATABASES


UNIT II OBJECT AND OBJECT RELATIONAL DATABASES


UNIT III XML DATABASES


UNIT IV MOBILE DATABASES


UNIT V INTELLIGENT DATABASES


TOTAL PERIODS:45
REFERENCES:


AIM:

To provide an in-depth knowledge in the field of Bioinformatics

OBJECTIVES:

- To get exposed to the domain of bioinformatics
- To understand the role of data warehousing and data mining for bioinformatics
- To learn to model bioinformatics based applications
- To understand how to deploy the pattern matching and visualization techniques in bioinformatics
- To study the Microarray technologies for genome expression

UNIT I – BIOINFORMATICS: AN INTRODUCTION

Introduction-Historical Overview and Definition- Bioinformatics Applications-Major Databases in Bioinformatics- Data Management and Analysis- Molecular Biology and Bioinformatics- Central Dogma of Molecular Biology

UNIT II –DATABASES

Introduction- Characteristics of Bioinformatics Databases- Categories of Bioinformatics Databases- Navigating databases- Sequence Databases- Nucleotide sequence database- secondary Nucleotide sequence database –protein sequence databases- structure databases- Structure file formats- Protein Structure Database Collaboration- PDB- CATH –SCOP- Other databases- Enzyme Databases- MEROPS- Pathway Databases:CAZy

UNIT III – TOOLS

Introduction- Need for Tools- Knowledge Discovery- Data- Mining Tools- Data Submission tools- Nucleotide Sequence Submission and Protein Submission tools- Data Analysis tools- Prediction Tools- Phylogenetic trees and Phylogenetic Analysis- Modelling Tools

UNIT IV – ALGORITHMS


UNIT V–GENOME ANALYSIS AND SEQUENCE ALIGNMENT

Introduction- Genome Analysis- Genome mapping- The Sequence Assembly Problem- Genome Sequencing- Biological Motivation of Alignment Problems- Methods of Sequence Alignments- Using Scoring matrices- Measuring Sequence Detection Efficiency- Working with FASTA and BLAST

TOTAL: 45 HOURS
TEXT BOOKS


REFERENCES

AIM:

To learn about the basic principles of Domain Engineering and its analysis, design process and tools

OBJECTIVES:

- Develop an application that uses GUI components, Font and Colours
- Develop an application that uses Layout Managers and event listeners.
- Develop a native calculator application.
- Write an application that draws basic graphical primitives on the screen.
- Develop an application that makes use of database.
- Develop an application that makes use of RSS Feed.
- Implement an application that implements Multi threading
- Develop a native application that uses GPS location information.
- Implement an application that writes data to the SD card.
- Implement an application that creates an alert upon receiving a message.
- Write a mobile application that creates alarm clock

UNIT I DOMAIN ENGINEERING BASICS


UNIT II DOMAIN MODELLING AND ANALYSIS


UNIT III DOMAIN DESIGN PROCESS

UNIT IV PRODUCT DEVELOPMENT ORGANIZATION AND MANAGEMENT


UNIT V TOOLS AND TECHNIQUES


TOTAL : 45 HOURS

TEXT BOOKS:

1. Jag Sodhi, Prince Sodhi – Software Reuse(Domain Analysis and Design Processes)

REFERENCES:

AIM:

To give an overall understanding on the Information theories and coding techniques.

OBJECTIVES:

1. To introduce to the students the concept of information and entropy of Information
2. To give the student the concept of compression of source coding: text, audio and speech image and video information, error control of Information.

UNIT I INFORMATION THEORY


UNIT II SOURCE CODING: TEXT, AUDIO AND SPEECH


UNIT III SOURCE CODING: IMAGE AND VIDEO


UNIT IV ERROR CONTROL CODING: BLOCK CODES

Definitions and Principles: Hamming weight, Hamming distance, Minimum distance decoding - Single parity codes, Hamming codes, Repetition codes - Linear block codes, Cyclic codes - Syndrome calculation, Encoder and decoder – CRC.

UNIT V ERROR CONTROL CODING: CONVOLUTIONAL CODES


TOTAL: 45 HOURS

TEXT BOOKS:


REFERENCES

1. K Sayood, "Introduction to Data Compression" 3/e, Elsevier 2006
AIM:
To understand this subject as a pragmatic examination of multicore programming and the hardware architecture of modern multicore processors

OBJECTIVES:
- To understand the shift from Single core to multicore processors
- To understand the different parallel programming models
- To measure the parallel program performance
- Understand the challenges in parallel and multi-threaded programming.
- Learn about the various parallel programming paradigms, and solutions

UNIT I MULTI-CORE PROCESSORS
Single core to Multi-core architectures – SIMD and MIMD systems – Interconnection networks - Symmetric and Distributed Shared Memory Architectures – Cache coherence - Performance Issues - Parallel program design.

UNIT II PARALLEL PROGRAM CHALLENGES
Performance – Scalability – Synchronization and data sharing – Data races – Synchronization primitives (mutexes, locks, semaphores, barriers) – deadlocks and livelocks – communication between threads (condition variables, signals, message queues and pipes).

UNIT III SHARED MEMORY PROGRAMMING WITH OpenMP

UNIT IV DISTRIBUTED MEMORY PROGRAMMING WITH MPI
MPI program execution – MPI constructs – libraries – MPI send and receive – Point-to-point and Collective communication – MPI derived datatypes – Performance evaluation

UNIT V PARALLEL PROGRAM DEVELOPMENT
Case studies - n-Body solvers – Tree Search – OpenMP and MPI implementations and comparison.

TOTAL: 45 PERIODS

TEXT BOOKS:

REFERENCES:
AIM:
To understand the concepts of Service oriented Architecture, Analysis Techniques and to develop skills and knowledge about service designs and web service standards.

OBJECTIVES:
- Learn XML fundamentals.
- Be exposed to build applications based on XML.
- Understand the key principles behind SOA.
- Be familiar with the web services technology elements for realizing SOA.
- Learn the various web service standards.

UNIT I INTRODUCTION TO XML 9

UNIT II BUILDING XML- BASED APPLICATIONS 9

UNIT III SERVICE ORIENTED ARCHITECTURE 9
Characteristics of SOA, Comparing SOA with Client-Server and Distributed architectures – Benefits of SOA -- Principles of Service orientation – Service layers.

UNIT IV WEB SERVICES 9

UNIT V BUILDING SOA-BASED APPLICATIONS 9

TOTAL: 45 PERIODS

TEXTBOOKS:
REFERENCES:


AIM:

To give an overall understanding on the theories those are available to solve hard real-world problems.

OBJECTIVES:

- Learn the various soft computing frameworks.
- Be familiar with design of various neural networks.
- Be exposed to fuzzy logic.
- Learn genetic programming.
- Be exposed to hybrid systems.

UNIT I INTRODUCTION


UNIT II NEURAL NETWORKS


UNIT III FUZZY LOGIC


UNIT IV GENETIC ALGORITHM


UNIT V HYBRID SOFT COMPUTING TECHNIQUES & APPLICATIONS

TOTAL PERIODS: 45

TEXT BOOKS:


REFERENCES:


AIM:
To attain knowledge in training software project managers and other individuals involved in software project planning and tracking and oversight in the implementation of the software project management process

OBJECTIVES:
- To outline the need for Software Project Management
- To highlight different techniques for software cost estimation and activity planning.

UNIT I PROJECT EVALUATION AND PROJECT PLANNING

UNIT II PROJECT LIFE CYCLE AND EFFORT ESTIMATION

UNIT III ACTIVITY PLANNING AND RISK MANAGEMENT

UNIT IV PROJECT MANAGEMENT AND CONTROL

UNIT V STAFFING IN SOFTWARE PROJECTS

TOTAL: 45 PERIODS
TEXTBOOK:

REFERENCES:
Aim:

The basic aim of this subject is to provide students with insight into XML Web Services, various key technologies for web services.

Objectives:

- To know about XML Web Services
- To know protocol architecture of XML services
- To learn how the web services can be developed using XML
- To learn about various security issues in the XML document.

UNIT I INTRODUCTION


UNIT II XML TECHNOLOGY


UNIT III RESTFUL WEB SERVICES


UNIT IV WEB SERVICES

Overview – Architecture – Key Technologies – UDDI – WSDL – ebXML – Web services in E-Com – Overview of .NET And J2EE.

UNIT V XML SECURITY AND XML IN PRACTICE


TOTAL: 45 HOURS

TEXT BOOK:


REFERENCES:

AIM:

To develop advanced network building skills and to study performance issues in advanced wireless and mobile networks.

OBJECTIVES:

- Understand the design issues in ad hoc and sensor networks.
- Learn the different types of MAC protocols.
- Be familiar with different types of adhoc routing protocols.
- Be expose to the TCP issues in adhoc networks.
- Learn the architecture and protocols of wireless sensor networks.

UNIT I INTRODUCTION


UNIT II MAC PROTOCOLS FOR AD HOC WIRELESS NETWORKS

Issues in designing a MAC Protocol- Classification of MAC Protocols- Contention based protocols- Contention based protocols with Reservation Mechanisms- Contention based protocols with Scheduling Mechanisms – Multi channel MAC-IEEE 802.11

UNIT III ROUTING PROTOCOLS AND TRANSPORT LAYER IN AD HOC WIRELESS NETWORKS

Issues in designing a routing and Transport Layer protocol for Ad hoc networks- proactive routing, reactive routing (on-demand), hybrid routing- Classification of Transport Layer solutions-TCP over Ad hoc wireless Networks.

UNIT IV WIRELESS SENSOR NETWORKS (WSNS) AND MAC PROTOCOLS

single node architecture: hardware and software components of a sensor node - WSN Network architecture: typical network architectures-data relaying and aggregation strategies - MAC layer protocols: self-organizing, Hybrid TDMA/FDMA and CSMA based MAC- IEEE 802.15.4. 91

UNIT V WSN ROUTING, LOCALIZATION & QOS


TEXT BOOK:

REFERENCES:


AIM:
To learn about the Human Values and Ethics that are followed in the field of engineering.

OBJECTIVES:
- To create an awareness on Engineering Ethics and Human Values.
- To instill Moral and Social Values and Loyalty.
- To appreciate the rights of others.

UNIT I HUMAN VALUES

UNIT II ENGINEERING ETHICS

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION
Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study.

UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS

UNIT V GLOBAL ISSUES
Multinational corporations - Environmental ethics - computer ethics - weapons development - engineers as managers-consulting engineers-engineers as expert witnesses and advisors - moral leadership-sample code of Ethics like ASME, ASCE, IEEE, Institution of Engineers(India), Indian Institute of Materials Management, Institution of electronics and telecommunication engineers(IETE),India, etc.

TOTAL: 45 HOURS

TEXT BOOKS:
REFERENCES:


2. Charles E Harris, Michael S. Protchard and Michael J Rabins, "Engineering Ethics - Concepts and Cases", Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available)


AIM:
To introduce the student to various Image processing and Pattern recognition techniques.

OBJECTIVES:
- To study the Image fundamentals.
- To study the mathematical morphology necessary for Image processing and Image segmentation.
- To study the Image Representation and description and feature extraction.
- To study the principles of Pattern Recognition.
- To know the various applications of Image processing.

UNIT I DIGITAL IMAGE FUNDAMENTALS
Elements of digital image processing systems- Elements of visual perception- basic relationship between pixels - brightness- contrast- hue- saturation- mach band effect- Color image fundamentals - RGB- HSI models- Image sampling and Quantization- dither.

UNIT II IMAGE TRANSFORMS

UNIT III IMAGE ENHANCEMENT AND RESTORATION

UNIT IV IMAGE SEGMENTATION AND REPRESENTATION
Image Segmentation: Point- line and edge detection- Edge linking- Thresholding -Region based segmentation: Region Growing, Region splitting and merging. 

UNIT V IMAGE COMPRESSION

TOTAL: 45 HOURS
TEXT BOOKS:


REFERENCES: