Program outcomes (POs)- Engineering & Technology

Engineering Graduates will be able to:

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES- B.Tech(CSE)

At the end of the program

PSO1: Graduates will have adequate knowledge of computer engineering domain to become employable in Industry.

PSO2: Graduate will have strong fundamentals and problem solving skills to analyze, design and develop economically feasible solutions for technical and social problems.

PSO3: Graduate will be aware of recent research trends, higher education and entrepreneurial opportunities, and will work ethically towards society.

PSO4: Graduate will be aware about the latest technology in software and hardware.

PSO5: Graduate will be exposed to industrial training giving hands on experience.

M.D UNIVERSITY
SCHEME OF STUDIES AND EXAMINATION
B.TECH. II YEAR (COMPUTER SCIENCE & ENGINEERING)
SEMESTER III
'F' Scheme effective from 2010-11

Sl. No	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)
			L	T	P	Total	Marks of Class works	Theory	Practical	Total	
1	MATH-201-F OR HUM-201-F	Mathematics III Common to (CSE,IT,ME,ECE,BME,EE,EEE,E&I,I&C) OR ENGG. ECONOMICS	3	2	-	5	50	100	-	150	**3**
2	CSE-201 F	Data Structures Using C (CSE,ECE,IT,EI)	3	1	-	4	50	100	-	150	**3**
3	CSE-203 F	Discrete Structures (CSE,IT)	3	1	-	4	50	100	-	150	**3**
4	EE-217 -F	Digital & Analog Communication (CSE,IT)	3	1	-	4	50	100	-	150	**3**
5	EE-204-F	Digital Electronics (Common with 4th Sem. – EE,EL,EI & IC)	3	1	-	4	50	100	-	150	**3**
6	HUM-203 F	Fundamental of Management (Common for all branches)	3	1	-	4	50	100	-	150	**3**
7	IT-201-F	PC Lab (CSE,IT)	-	-	3	3	50	-	50	100	**3**
8	CSE-205-F	Data Structures Using C Lab (CSE,ECE,IT,EI)	-	-	2	2	25	-	25	50	**3**
9	EE-224-F	Digital Electronics Lab (CSE,IT & Common with 4th Sem. – EE,EL,EI & IC)	-	-	3	3	50	-	50	100	**3**
		TOTAL	**18**	**7**	**8**	**33**	**425**	**600**	**125**	**1150**	

NOTE: 1.**Students will be allowed to use non-programmable scientific calculator. However, sharing of Calculator will not be permitted in the examination.**

MATH-201-F **MATHEMATICS-III**

L T P		
3 2 0	Class Work marks	: 50
	Theory marks	: 100
	Total marks	: 150
	Duration of Exam	: 3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Fourier Series and Fourier Transforms : Euler's formulae, conditions for a Fourier expansion, change of interval, Fourier expansion of odd and even functions, Fourier expansion of square wave, rectangular wave, saw-toothed wave, half and full rectified wave, half range sine and consine series.

Fourier integrals, Fourier transforms, Shifting theorem (both on time and frequency axes), Fourier transforms of derivatives, Fourier transforms of integrals, Convolution theorem, Fourier transform of Dirac-delta function.

Section-B

Functions of Complex Variable : Definition, Exponential function, Trignometric and Hyperbolic functions, Logrithmic functions. Limit and Continuity of a function, Differnetiability and Analyticity.

Cauchy-Riemann equations, necessary and sufficient conditions for a function to be analytic, polar form of the Cauchy-Riemann equations. Harmonic functions, application to flow problems. Integration of complex functions. Cauchy-Integral theorem and fourmula.

Section-C

Power series, radius and circle of convergence, Taylor's Maclaurin's and Laurent's series. Zeroes and singularities of complex functions, Residues. Evaluation of real integrals using residues (around unit and semi circle only).

Probability Distributions and Hypothesis Testing : Conditional probability, Bayes theorem and its applications, expected value of a random variable. Properties and application of Binomial, Poisson and Normal distributions.

Section D

Testing of a hypothesis, tests of significance for large samples, Student's

t-distribution

(applications only), Chi-square test of goodness of fit.

Linear Programming: Linear programming problems formulation, Solving linear programming problems using (i) Graphical method (ii) Simplex method (iii) Dual simplex method.

1. Engg Mathematics By Babu Ram, Pearson India
2. Advanced Engg. Mathematics : F Kreyszig.
3. Higher Engg. Mathematics : B.S. Grewal.

Course Outcomes

The students will learn:
CO1 - The tool of Fourier series and Fourier Transform for learning advanced Engineering Mathematics.
CO2 - The tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
CO3 - The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.
CO4 - The basic ideas of statistics including various discrete and Continuous probability distributions.
CO5 - The statistical methods of studying data samples.
CO6 - The effective mathematical tools for the solutions of Linear Programming Problem (LPP).

REFERENCE BOOKS :

1. Advance Engg. Mathematics : R.K. Jain, S.R.K.Iyenger.
2. Advanced Engg. Mathematics : Michael D. Greenberg.
3. Operation Research : H.A. Taha.
4. Probability statistics for Engineers : Johnson and. PHI

HUM-201-F **ENGINEERING ECONOMICS**

L T P		
3 1 0	Class Work marks	: 50
	Theory marks	: 100
	Total marks	: 150
	Duration of Exam	: 3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which **will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions**.

To take an understanding of Indian Economy

Section-A

Definition of Economics - various definitions, Nature of Economic problem, Production possibility curve Economic laws and their nature. Relation between Science, Engineering, Technology and Economics.

Concepts and measurement of utility, Law of Diminishing Marginal Utility, Law of equi-marginal utility - its practical application and importance.

Section-B

Meaning of Demand, Individual and Market demand schedule, Law of demand, shape of demand curve, Elasticity of demand, measurement of elasticity of demand, factors effecting elasticity of demand, practical importance & applications of the concept of elasticity of demand.

Meaning of production and factors of production; Law of variable proportions, Returns to scale, Internal and External economics and diseconomies of scale.

Section-C

Various concepts of cost - Fixed cost, variable cost, average cost, marginal cost, money cost, real cost opportunity cost. Shape of average cost, marginal cost, total cost etc. in short run and long run.

Meaning of Market, Types of Market - Perfect Competition, Monopoly, Oligoply, Monoplistic Competition (Main features of these markets)

Section-D

Supply and Law of Supply, Role of Demand & Supply in Price Determinition and effect of changes in demand and supply on prices.

Nature and characteristics of Indian economy (brief and elementary introduction),

Privatization - meaning, merits and demerits. Globalisation of Indian economy - merits and demerits. Elementary Concepts of VAT, WTO, GATT & TRIPS agreement.

COURSE OUTCOMES

Upon successful completion of this course, the student will be able to:

CO1 - explain the basic economic principles of wants, scarcity, choice, opportunity cost, etc as applied to business organizations and engineering firms;

CO2 - understand the role of demand and supply law

CO3 - carry out the cost analysis of a manufactured product;

CO4 - fully understand nature and characteristics of Indian Economy

TEXT BOOKS :

1. Principles of Economics : P.N. Chopra (Kalyani Publishers).
2. Modern Economic Theory – K.K. Dewett (S.Chand)

REFERENCE BOOKS :

1. A Text Book of Economic Theory Stonier and Hague (Longman's Landon)
2. Micro Economic Theory – M.L. Jhingan (S.Chand)
3. Micro Economic Theory - H.L. Ahuja (S.Chand)
4. Modern Micro Economics : S.K. Mishra (Pragati Publications)
5. Economic Theory - A.B.N. Kulkarni & A.B. Kalkundrikar (R.Chand & Co.)
6. Indian Economy : Rudar Dutt & K.P.M. Sundhram

CSE-201 F **Data Structures Using 'C'**

(CSE, EL, ECE, IT, ECE)

L T P
3 1

Class Work: 50
Exam: 100
Total:150
Duration of Exam: 3 hrs.

Note: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A Overview of C, Introduction, Stacks and Queues

Overview of 'C' : Introduction , Flow of Control, Input output functions, Arrays and Structures, Functions

Data structures and Algorithms: an overview : concept of data structure, choice of right data structures, types of data structures, basic terminology Algorithms, how to design and develop an algorithm: stepwise refinement, use of accumulators and counters; algorithm analysis, complexity of algorithms Big-oh notation.

Arrays : Searching Sorting: Introduction, One Dimensional Arrays, operations defined : traversal, selection, searching, insertion, deletion, and sorting

Searching: linear search, binary search; Sorting : selection sort, bubble sort, insertion sort, merge sort, quick sort, shell sort. Multidimensional arrays, address calculation of a location in arrays.

Stacks and queues: Stacks, array representation of stack. Applications of stacks. Queues, Circular queues, , array representation of Queues,. Deques, priority queues, Applications of Queues.

Section-B Pointers and Linked Lists;

Pointers: Pointer variables, Pointer and arrays, array of pointers, pointers and structures, Dynamic allocation.

Linked Lists: Concept of a linked list,. Circular linked list, doubly linked list, operations on linked lists. Concepts of header linked lists. Applications of linked lists, linked stacks, linked Queues.

Section-C Trees and Graphs

Trees: Introduction to trees, binary trees, representation and traversal of trees, operations on binary trees, types of binary trees, threaded binary trees, B Trees, . Application of trees.

Graphs : Introduction, terminology, 'set, linked and matrix' representation, operations on graphs, Applications of graph

Section-D file Handling and Advanced data Structure

Introduction to file handling, Data and Information, File concepts, File organization, files and streams, working with files. AVL trees, Sets, list representation of sets, applications of sets, skip lists

COURSE OUTCOMES:

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

CO1 - Problem solving through computer programming
CO2 - Familiarity of programming environment in Linux operating system
CO3 - Ability to use different memory allocation methods
CO4 - Ability to deal with different input/output methods
CO5 - Ability to use different data structures

Text Book:

Data Structures using C by A. M. Tenenbaum, Langsam, Moshe J. Augentem, PHI Pub.
Data Structures using C by A. K. Sharma, Pearson

Data Structures and Algorithms by A.V. Aho, J.E. Hopcroft and T.D. Ullman, Original edition, Addison-Wesley, 1999, Low Priced Edition.

Fundamentals of Data structures by Ellis Horowitz & Sartaj Sahni, Pub, 1983,AW
Fundamentals of computer algorithms by Horowitz Sahni and Rajasekaran.
Data Structures and Program Design in C By Robert Kruse, PHI,
Theory & Problems of Data Structures by Jr. Symour Lipschetz, Schaum's outline by TMH
Introduction to Computers Science -An algorithms approach , Jean Paul Tremblay, Richard B. Bunt, 2002, T.M.H.
Data Structure and the Standard Template library – Willam J. Collins, 2003, T.M.H

CSE-203 F **Discrete Structures**

L	T	P
3	1	-

Class Work:	50
Exam:	100
Total:	150

NOTE: Duration of Exam: 3 Hrs.

For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A: Set Theory and Propositional Calculus:
Introduction to set theory, Set operations, Algebra of sets, Duality, Finite and Infinite sets, Classes of sets, Power Sets, Multi sets, Cartesian Product, Representation of relations, Types of relation, Equivalence relations and partitions , Partial ordering relations and lattices Function and its types, Composition of function and relations, Cardinality and inverse relations

Introduction to propositional Calculus: Basic operations: AND(^), OR(v), NOT(~), Truth value of a compound statement, propositions, tautologies, contradictions.

Section B: Techniques of Counting and Recursion and recurrence Relation:

Permutations with and without repetition, Combination.Polynomials and their evaluation, Sequences, Introduction to AP, GP and AG series, partial fractions, linear recurrence relation with constant coefficients, Homogeneous solutions, Particular solutions, Total solution of a recurrence relation using generating functions.

Section C: Algebric Structures

Definition and examples of a monoid, Semigroup, Groups and rings, Homomorphism, Isomorphism and Automorphism, Subgroups and Normal subgroups, Cyclic groups, Integral domain and fields, Cosets, Lagrange's theorem

Section D: Section Graphs and Trees:

Introduction to graphs, Directed and Undirected graphs, Homomorphic and Isomorphic graphs, Subgraphs, Cut points and Bridges, Multigraph and Weighted graph, Paths and circuits, Shortest path in weighted graphs, Eurelian path and circuits, Hamilton paths and circuits, Planar graphs, Euler's formula, Trees, Spanning trees, Binary trees and its traversals

Text Book:
Elements of Discrete Mathematics,C.L Liu, 1985, McGraw Hill

COURSE OUTCOMES:

After the completion of the course the student will be able to:
CO1 - To appreciate the basic principles of Boolean algebra, Logic, Set theory
CO2 - Permutations and combinations and Graph Theory.
CO3 - Be able to construct simple mathematical proofs
CO4 - Be able to understand logical arguments and logical constructs. Have a better understanding of sets, functions, and relations.
CO5 - Acquire ability to describe computer programs in a formal mathematical manner

Reference Books:

Discrete Mathematics by Johnson Bough R., 5th Edition, PEA, 2001..

Concrete Mathematics: A Foundation for Computer Science, Ronald Graham, Donald Knuth and Oren Patashik, 1989, Addison-Wesley.

Mathematical Structures for Computer Science, Judith L. Gersting, 1993, Computer Science Press.

Applied Discrete Structures for Computer Science, Doerr and Levasseur, (Chicago: 1985,SRA

Discrete Mathematics by A. Chtewynd and P. Diggle (Modular Mathematics series), 1995, Edward Arnold, London,

Schaums Outline series: Theory and problems of Probability by S. Lipshutz, 1982, McGraw-Hill Singapore

Discrete Mathematical Structures, B. Kolman and R.C. Busby, 1996, PHI

Discrete Mathematical Structures with Applications to Computers by Tembley & Manohar, 1995, Mc Graw Hill.

EE-217 F **Digital and Analog Communication**
(CSE, IT)

L	T	P
3	1	-

Class Work: 50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A: Communication system components:

Introduction to Communication: Definition & means of communications; Digital and analog signals: sign waves, square waves; Properties of signals: amplitude, frequency, phase; Theoretical basis for data communication: Fourier analysis: Fourier series and Fourier Transform (property, ESD, PSD and Raleigh) effect of limited bandwidth on digital signal.

Section B: Data Transmission System:

Physical connections: modulation, amplitude-, frequency-, phase- modulation; Data encoding: binary encoding (NRZ), Manchester encoding, differential Manchester encoding. Transmission Media: Twisted pair-, co-axial-, fiber optic-cables, wireless media Transmission impairments: attenuation, limited bandwidth of the channels, delay distortion, noise, data rate of the channels (Nyquist theorem, Shannon limit). Physical layer interfaces: RS 232, X.21

Section C: Standards in data communications:

Communication modes: simplex, half duplex, full duplex; Transmission modes: serial-, parallel-transmission; Synchronizations: Asynchronous-, synchronous-transmission; Type of services: connection oriented-, connectionless-services; Flow control: unrestricted simplex protocol, simplex stop- and -wait protocol, sliding window protocol; Switching systems: circuit switching; picketing switching: data gram , virtual circuits, permanent virtual circuits. Telephone Systems: PSTN, ISDN, asynchronous digital subscriber line. Multiplexing: frequency division-, time-, wave- division multiplexing

Section D: Security in data communications:

Transmission errors: feedback-, forward-error control approaches; Error detection; Parity check, block sum check, frame check sequences; Error correction: hamming codes, cyclic redundancy check; Data encryption: secret key cryptography, public key cryptograph; Data compression: run length encoding, Huffman encoding.

COURSE OUTCOMES:

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

CO1 - Understand basic elements of a communication system
CO2 - Conduct analysis of baseband signals in time domain and in frequency domain

CO3 - Demonstrate understanding of various analog and digital modulation and demodulation techniques techniques.
CO4 - Analyse the performance of modulation and demodulation techniques in various transmission environments
CO5 - Appreciate the importance of synchronisation in communication system

Text Book:

Data Communications, Computer Networks and Open Systems Halsall Fred, (4th editon) 2000, Addison Wesley, Low Price edition

Reference Books:

Business Data Communications, Fitzgerald Jerry, 7th Ed. New York, 2001, JW&S,
Communication Systems, 4th Edi, by A. Bruce Carlson, Paul B. Crilly, Janet C. Rutledge, 2002, TMH.
Data Communications, Computer Networks and Open Systems, Halsall Fred, 1996,
AW. Digital Communications, J.G. Proakiss, 4th Ed., MGH
Satellite Communication, Pratt, John Wiley
Data & Computer Communications, W.Stallings PHI
Digital & Data Communication systems, Roden 1992, PHI,
Introduction to Digital & Data Communications, Miller Jaico Pub.
Data Communications and Networking, Behrouz A. Forouzan, 2003, 2nd Edition, T.M.H

EE-204-F **DIGITAL ELECTRONICS**

L T P		
3 1 0	Class Work marks	: 50
	Theory marks	: 100
	Total marks	: 150
	Duration of Exam	: 3 hr

NOTE: For setting up the question paper, Question No 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

SECTION-A

Digital system and binary numbers: Signed binary numbers, binary codes, cyclic codes, error detecting and correcting codes, hamming codes.

Gate-level minimization: The K-map method up to five variable, don't care conditions, POS simplification, NAND and NOR implementation, Quine Mc-Clusky method (Tabular method)

SECTION-B

Combinational Logic: Combinational circuits, analysis procedure, design procedure, binary adder-subtractor, decimal adder, binary multiplier, magnitude comparator, decoders, encoders, multiplexers ,demultiplexers

SECTION –C

Synchronous Sequential logic: Sequential circuits, storage elements: latches, flip flops, analysis of clocked sequential circuits, state reduction and assignments, design procedure. Registers and counters: Shift registers, ripple counter, synchronous counter, other counters

SECTION- D

Memory and programmable logic: RAM, ROM, PLA, PAL. Design at the register transfer level: ASMs, design example, design with multiplexers. Asynchronous sequential logic: Analysis procedure, circuit with latches, design procedure, reduction of state and flow table, race Free State assignment, hazards

COURSE OUTCOMES:

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

CO1 - Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.

CO2 - To understand and examine the structure of various number systems and its application in digital design.
CO3 - The ability to understand, analyze and design various combinational and sequential circuits.
CO4 - Ability to identify basic requirements for a design application and propose a cost effective solution.
CO5 - To develop skill to build, and troubleshoot digital circuits.

Text Book:

M. Morris Mano and M. D. Ciletti, "Digital Design", 4th Edition, Pearson Education

Pedroni - Digital Electronics & Design, Elsevier
R.P. Jain , "Modern digital electronics" , 3rd edition , 12th reprint TMH Publication, 2007. Digital Design and computer organization: Nasib Singh Gill & J. B. Dixit

REFERENCE BOOKS :

Grout - Digital Design using FPGA'S & CPLD's, Elsevier F. Vahid: Digital
Design*:* Wiley Student Edition, 2006
J. F. Wakerly, *Digital Design Principles and Practices*, Fourth Edition, Prentice-Hall, 2005.
R. L. Tokheim, *Digital electronics, Principles and applications*, 6th Edition, Tata McGraw Hill Edition, 2003

HUM-203-F **FUNDAMENTALS OF MANAGEMENT**

L T P		
3 1 0	Class Work marks	: 50
	Theory marks	: 100
	Total marks	: 150
	Duration of Exam :	3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Meaning of management, Definitions of Management, Characteristics of management, Management Vs. Administration. Management-Art, Science and Profession. Importance of Management. Development of Management thoughts.
Principles of Management. The Management Functions, Inter-relationship of Managerial functions.
Nature and Significance of staffing, Personnel management, Functions of personnel management, Manpower planning, Process of manpower planning, Recruitment, Selection; Promotion - Seniority Vs. Merit. Training - objectives and types of training.

Section-B

Production Management : Definition, Objectives, Functions and Scope, Production Planning and Control; its significance, stages in production planning and control. Brief introduction to the concepts of material management, inventory control; its importance and various methods**.**

Section-C

Marketing Management - Definition of marketing, Marketing concept, objectives & Functions of marketing.
Marketing Research - Meaning; Definition; objectives; Importance; Limitations; Process.
Advertising - meaning of advertising, objectives, functions, criticism.

Section-D

Introduction of Financial Management, Objectives of Financial Management, Functions and Importance of Financial Management. Brief Introduction to the concept of capital structure and various sources of finance.

BOOKS RECOMMENDED :

Course outcomes:

Students will be able to understand

CO1 - Evolution of Management and contribution of Management thinkers.

CO2 - importance of staffing and training

CO3 - the concept of material management and inventory control

CO4 - the components of marketing and advertising

CO5 - various sources of finance and capital structure

TEXT BOOKS :

Principles and Practice of Management - R.S. Gupta, B.D.Sharma, N.S. Bhalla. (Kalyani Publishers)
Organisation and Management - R.D. Aggarwal (Tata Mc Graw Hill)

REFERENCE BOOKS :

Principles & Practices of Management – L.M. Prasad (Sultan Chand & Sons) Management – Harold, Koontz and Cyrilo Donell (Mc.Graw Hill).
Marketing Management – S.A. Sherlikar (Himalaya Publishing House, Bombay). Financial Management - I.M. Pandey (Vikas Publishing House, New Delhi)
Management - James A.F. Stoner & R.Edward Freeman, PHI.

IT-201 F **PC Lab.**

L	T	P	Class Work:	50
-	-	3	Exam:	50
			Total:	100
			Duration of Exam: 3 Hrs.	

PC Software: Application of basics of MS Word 2000, MS Excel 2000, MS Power Point 2000, MS Access 2000.

1. To prepare the Your Bio Data using MS Word
2. To prepare the list of marks obtained by students in different subjects and show with the help of chart/graph the average, min and max marks in each subject.
3. Preapare a presentation explaining the facilities/infrastructure available in your college/institute.
4. Create a database of books in the library on a mini scale w.r.t. Computers and manipulate the database using different forms and reports.

PC Hardware :

1. To check and measure various supply voltages of PC.
2. To make comparative study of motherboards.
3. To observe and study various cables, connections and parts used in computer communication.
4. To study various cards used in a system viz. display card, LAN card etc.
5. To remove, study and replace floppy disk drive.
6. To remove, study and replace hard disk.
7. To remove, study and replace CD ROM drive.
8. To study monitor, its circuitry and various presents and some elementary fault detection.
9. To study printer assembly and elementary fault detection of DMP and laser printers.
10. To observe various cables and connectors used in networking.
11. To study parts of keyboard and mouse.
12. To assemble a PC.
13. Troubleshooting exercises related to various components of computer like monitor, drives, memory and printers etc.

COURSE OUTCOMES:

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

CO1 - Know the use of computer hardware and software

CO2 - The Internet, networking and mobile computing.

CO3 - Provide hands-on use of Microsoft Office applications Word, Excel, Access and PowerPoint. Completion of the assignments will result in MS Office applications knowledge and skills.

CO4 - Troubleshooting exercises related to various components of computer like monitor, drives, memory and printers etc.

CO5 - remove, study and replace floppy disk drive, hard disk, CD ROM drive assemble a PC.

Reference Books:

Complete PC upgrade & maintenance guide, Mark Mines, BPB publ.

PC Hardware: The complete reference, Craig Zacker & John Rouske, TMH Upgrading and Repairing PCs, Scott Mueller, 1999, PHI,

Note: **At least 5 to 10 more exercises to be given by the teacher concerned.**

CSE-205 F **Data Structures using 'C' Lab.**

L	T	P		
-	-	2	Class Work:	25
			Exam:	25
			Total:	50

Duration of Exam: 3 Hrs.

1. Write a program to search an element in a two-dimensional array using linear search.

2. Using iteration & recursion concepts write programs for finding the element in the array
using Binary Search Method

3. Write a program to perform following operations on tables using functions
only a) Addition b) Subtraction c) Multiplication d) Transpose

4. Using iteration & recursion concepts write the programs for Quick Sort Technique

5. Write a program to implement the various operations on string such as length of string concatenation, reverse of a string & copy of a string to another.

6. Write a program for swapping of two numbers using 'call by value' and 'call by reference strategies.

7. Write a program to implement binary search tree.
(Insertion and Deletion in Binary search Tree)

8. Write a program to create a linked list & perform operations such as insert, delete, update, reverse in the link list

9 . Write the program for implementation of a file and performing operations such as insert,
delete, update a record in the file.

10. Create a linked list and perform the following operations on it
a) add a node b) Delete a node

11. Write a program to simulate the various searching & sorting algorithms and compare their timings for a list of 1000 elements.

12. Write a program to simulate the various graph traversing algorithms.

13. Write a program which simulates the various tree traversal algorithms.

Note: At least 5 to 10 more exercises to be given by the teacher concerned.

COURSE OUTCOMES:

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

CO1 - summarize searching and sorting techniques

CO2 - describe stack, queue and linked list operation, have knowledge of tree and graphs concepts.

CO3 - Know about the basic concepts of Function, Array and Link-list.

CO4 - Understand how several fundamental algorithms work particularly those concerned with Stack, Queues, Trees and various Sorting algorithms.

CO5 - Design new algorithms or modify existing ones for new applications and able to analyze the space & time efficiency of most algorithms

EE-224-F **DIGITAL ELECTRONICS LAB**

L	T	P
0	0	3

Class Work marks : 50
Theory marks : 50
Total marks : 100

Objective: To understand the digital logic and create various systems by using these logics.

1. Introduction to digital electronics lab- nomenclature of digital ICs, specifications, study of the data sheet, concept of V_{cc} and ground, verification of the truth tables of logic gates using TTL ICs.
2. Implementation of the given Boolean function using logic gates in both SOP and POS forms.
3. Verification of state tables of RS, JK, T and D flip-flops using NAND & NOR gates.
4. Implementation and verification of Decoder/De-multiplexer and Encoder using logic gates.
5. Implementation of 4x1 multiplexer using logic gates.
6. Implementation of 4-bit parallel adder using 7483 IC.
7. Design, and verify the 4-bit synchronous counter.
8. Design, and verify the 4-bit asynchronous counter.
9. Static and Dynamic Characteristic of NAND and Schmitt-NAND gate(both TTL and MOS)
10. Study of Arithmetic Logic Unit.
11. Mini Project.

NOTE : Ten experiments are to be performed, out of which at least seven experiments should be performed from above list. Remaining three experiments may either be performed from the above list or designed & setup by the concerned institution as per the scope of the syllabus.

COURSE OUTCOMES: After the completion of the course the student will be able to:

CO1 - Understand the design of sequential Circuits such as Flip-Flops, Registers, and Counters.
CO2 - Obtain a basic level of Digital Electronics knowledge.
CO3 - Set the stage to perform the analysis and design of Complex Digital electronic Circuits

M.D UNIVERSITY
SCHEME OF STUDIES AND EXAMINATION
B.TECH. II YEAR (COMPUTER SCIENCE & ENGINEERING)
SEMESTER - IV
'F' Scheme effective from 2010-11

Sl. No.	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)
			L	T	P	Total	Marks of Class work	Theory	Practical	Total	
1	CSE-202 F	Data Base Management Systems (CSE,IT)	3	1	-	4	50	100	-	150	**3**
2	CSE-204 F	Programming Languages	3	1	-	4	50	100	-	150	**3**
3	MATH-201-F OR HUM-201-F	Mathematics III Common to (CSE,IT,ME,ECE,BME,EE,EEE,E&I,I&C) OR ENGG. ECONOMICS	3	2	-	5	50	100	-	150	**3**
4	IT-202-F	Object-Oriented Programming using C++ (CSE,IT)	3	1	-	4	50	100	-	150	**3**
5	CSE-208 F	Internet Fundamentals (CSE,IT)	3	1	-	4	50	100	-	150	**3**
6	CSE-210 F	Computer Architecture and Organization (CSE,IT and Common with 5th Sem. EL,EI,IC)	3	1	-	4	50	100	-	150	**3**
7	CSE-212 F	Data Base Management Systems Lab. (CSE,IT)	-	-	3	3	50	-	50	100	**3**
8	IT-206-F	C++ Programming Lab. (CSE,IT)	-	-	2	2	25	-	25	50	**3**
9	CSE-214 F	Internet Lab. (CSE,IT)	-	-	2	2	25	-	25	50	3
10	GP-202 F	General Proficiency	-	-	2	2	50	-	-	50	
		TOTAL	**18**	**6**	**9**	**34**	**450**	**600**	**100**	**1150**	

Note:

1) **Students will be allowed to use non-programmable scientific calculator. However, sharing of**
2) **Calculator will not be permitted in the examination.**
3) **Each student has to undergo practical training of 6 weeks during summer vacation and its evaluation shall be carried out in the V semester.**

CSE-202 F **Database Management Systems**

L	T	P
3	1	-

Class Work:	50
Exam:	100
Total:	150
Duration of Exam:	3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

SECTION A: Introduction, Client Server Arch., E-R Diagram and Keys

Overview of database Management System; Various views of data, data Models, Introduction to Database Languages. Advantages of DBMS over file processing systems, Responsibility of Database Administrator,

Introduction to Client/Server architecture, Three levels architecture of Database Systems, E-R Diagram (Entity Relationship), mapping Constraints, Keys, Reduction of E-R diagram into tables.

Section B: File Organization and Relational Model and Calculus:

Sequential Files, index sequential files, direct files, Hashing, B-trees Index files.

Relational Model, Relational Algebra & various operations, Relational and Tuple calculus.

Section C; Introduction to Query Languages :

QLB , QBE, Structured query language – with special reference of (SQL of ORACLE), integrity constraints, functional dependencies & NORMALISATION – (up to 4^{th} Normal forms), BCNF (Boyce – code normal forms)

SECTION D:

Introduction to Distributed Data processing, parallel Databases, data mining & data warehousing, network model & hierarchical model, Introduction to transaction, properties of transaction and life cycle of transaction, Introduction to Concurrency control and Recovery systems., need of concurrency control and recovery system, problems in concurrent transactions.

COURSE OUTCOMES:

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

CO1 - To understand the basic concepts, applications and architecture of database systems

CO2 - To master the basics of ER diagram, SQL, construct queries using SQL, relational database theory and relational algebra expressions for queries.

CO3 - To understand sound design principles for logical design of databases, normalization and become familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B- tree and hashing.
To understand the basic issues of transaction processing, concurrency control, recovery, parallel and distributed databases

Text Books:

Database System Concepts by A. Silberschatz, H.F. Korth and S. Sudarshan, 3rd edition, 1997, McGraw-Hill, International Edition.
Introduction to Database Management system by Bipin Desai, 1991, Galgotia Pub.

Reference Books:

Fundamentals of Database Systems by R. Elmasri and S.B. Navathe, 3rd edition, 2000, Addision-Wesley, Low Priced Edition.

An Introduction to Database Systems by C.J. Date, 7th edition, Addison-Wesley, Low Priced Edition, 2000.

Database Management and Design by G.W. Hansen and J.V. Hansen, 2nd edition, 1999, Prentice-Hall of India, Eastern Economy Edition.

Database Management Systems by A.K. Majumdar and P. Bhattacharyya, 5th edition, 1999, Tata McGraw-Hill Publishing.

A Guide to the SQL Standard, Date, C. and Darwen,H. 3rd edition, Reading, MA: 1994, Addison-Wesley.

Data Management & file Structure by Looms, 1989, PHI

CSE-204 F **Programming Languages**

L	T	P
3	1	-

Class Work: 50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A: Introduction:

Syntactic and semantic rules of a Programming language, Characteristics of a good programming language, Programming language translators compiler & interpreters , Elementary data types – data objects, variable & constants, data types, Specification & implementation of elementary data types, Declarations ,type checking & type conversions , Assignment & initialization, Numeric data types, enumerations, Booleans & characters.

Section B: Structured data objects, Subprograms and Programmer Defined Data Type :

Structured data objects & data types , specification & implementation of structured data types, Declaration & type checking of data structure ,vector & arrays, records Character strings, variable size data structures , Union, pointer & programmer defined data objects, sets, files.

Evolution of data type concept, abstraction, encapsulation & information hiding, Subprograms, type definitions, abstract data types.

Section C: Sequence Control and Data Control:

Implicit & explicit sequence control, sequence control within expressions, sequence control within statement, Subprogram sequence control: simple call return, recursive subprograms, Exception & exception handlers, co routines, sequence control. Names & referencing environment, static & dynamic scope, block structure, Local data & local referencing environment, Shared data: dynamic & static scope. Parameter & parameter transmission schemes.

Section D: Storage Management, Programming languages:

Major run time elements requiring storage ,programmer and system controlled storage management & phases , Static storage management , Stack based storage management, Heap storage management ,variable & fixed size elements.Introduction to procedural, non-procedural ,structured, functional and object oriented programming language, Comparison of C & C++ programming languages.

COURSE OUTCOMES:

After the completion of the course the student will be able to:
:
CO1 - Independently understand basic concept of programming languages.

CO2 - To be able to computational solutions in several of the main programming idioms.

CO3 - To be able to select an appropriate programming language for solving a computational problem, with justification.

CO4 - To know and understand the principles of programming languages – Abstraction; Syntax and Semantics Values and Names; Expressions; Procedures Sequence and Data Control; Storage Management etc.

Text Book:

Programming languages Design & implementation by T.W. .Pratt, 1996, Prentice Hall Pub.
Programming Languages – Principles and Paradigms by Allen Tucker & Robert Noonan, 2002, TMH,

Fundamentals of Programming languages by Ellis Horowitz, 1984, Galgotia publications (Springer Verlag),
Programming languages concepts by C. Ghezzi, 1989, Wiley Publications.,
Programming Languages – Principles and Pradigms Allen Tucker , Robert Noonan 2002, T.M.H.

MATH-201-F MATHEMATICS-III

L T P		
3 2 0	Class Work marks	: 50
	Theory marks	: 100
	Total marks	: 150
	Duration of Exam:	3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Fourier Series and Fourier Transforms : Euler's formulae, conditions for a Fourier expansion, change of interval, Fourier expansion of odd and even functions, Fourier expansion of square wave, rectangular wave, saw-toothed wave, half and full rectified wave, half range sine and consine series.

Fourier integrals, Fourier transforms, Shifting theorem (both on time and frequency axes), Fourier transforms of derivatives, Fourier transforms of integrals, Convolution theorem, Fourier transform of Dirac-delta function.

Section-B

Functions of Complex Variable : Definition, Exponential function, Trignometric and Hyperbolic functions, Logrithmic functions. Limit and Continuity of a function, Differnetiability and Analyticity.

Cauchy-Riemann equations, necessary and sufficient conditions for a function to be analytic, polar form of the Cauchy-Riemann equations. Harmonic functions, application to flow problems. Integration of complex functions. Cauchy-Integral theorem and fourmula.

Section-C

Power series, radius and circle of convergence, Taylor's Maclaurin's and Laurent's series. Zeroes and singularities of complex functions, Residues. Evaluation of real integrals using residues (around unit and semi circle only).

Probability Distributions and Hypothesis Testing : Conditional probability, Bayes theorem and its applications, expected value of a random variable. Properties and application of Binomial, Poisson and Normal distributions.

Section D

Testing of a hypothesis, tests of significance for large samples, Student's t-distribution (applications only), Chi-square test of goodness of fit.

Linear Programming: Linear programming problems formulation, Solving linear

programming problems using (i) Graphical method (ii) Simplex method (iii) Dual simplex method.

Course Outcomes

The students will learn:

CO1 - The tool of Fourier series and Fourier Transform for learning advanced Engineering Mathematics.
CO2 - The tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
CO3 - The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.
CO4 - The basic ideas of statistics including various discrete and Continuous probability distributions.
CO5 - The statistical methods of studying data samples, the effective mathematical tools for the solutions of Linear Programming Problem (LPP).

TEXT BOOKS :

1. Engg Mathematics By Babu Ram, Pearson India
2. Advanced Engg. Mathematics : F Kreyszig.
3. Higher Engg. Mathematics : B.S. Grewal.

REFERENCE BOOKS :

1. Advance Engg. Mathematics : R.K. Jain, S.R.K.Iyenger.
2. Advanced Engg. Mathematics : Michael D. Greenberg.
3. Operation Research : H.A. Taha.
4. Probability statistics for Engineers : Johnson and. PHI

HUM-201-F **ENGINEERING ECONOMICS**

L T P		
3 1 0	Class Work marks	: 50
	Theory marks	: 100
	Total marks	: 150
	Duration of Exam :	3 hr

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Definition of Economics - various definitions, Nature of Economic problem, Production possibility curve Economic laws and their nature. Relation between Science, Engineering, Technology and Economics.

Concepts and measurement of utility, Law of Diminishing Marginal Utility, Law of equi-marginal utility - its practical application and importance.

Section-B

Meaning of Demand, Individual and Market demand schedule, Law of demand, shape of demand curve, Elasticity of demand, measurement of elasticity of demand, factors effecting elasticity of demand, practical importance & applications of the concept of elasticity of demand.

Meaning of production and factors of production; Law of variable proportions, Returns to scale, Internal and External economics and diseconomies of scale.

Section-C

Various concepts of cost - Fixed cost, variable cost, average cost, marginal cost, money cost, real cost opportunity cost. Shape of average cost, marginal cost, total cost

etc. in short run and long run.

Meaning of Market, Types of Market - Perfect Competition, Monopoly, Oligoply, Monoplistic Competition (Main features of these markets)

Section-D

Supply and Law of Supply, Role of Demand & Supply in Price Determinition and effect of changes in demand and supply on prices. Nature and characteristics of Indian economy (brief and elementary introduction), Privatization - meaning, merits and demerits. Globalisation of Indian economy - merits and demerits. Elementary Concepts of VAT, WTO, GATT & TRIPS agreement.

COURSE OUTCOMES

Upon successful completion of this course, the student will be able to:

CO1 - explain the basic economic principles of wants, scarcity, choice, opportunity cost, etc as applied to business organizations and engineering firms;

CO2 - understand the role of demand and supply law

CO3 - carry out the cost analysis of a manufactured product;

CO4 - fully understand nature and characteristics of Indian Economy

TEXT BOOKS :

Principles of Economics : P.N. Chopra (Kalyani Publishers).

Modern Economic Theory – K.K. Dewett (S.Chand)

REFERENCE BOOKS:

A Text Book of Economic Theory Stonier and Hague (Longman's
Landon) Micro Economic Theory – M.L. Jhingan (S.Chand)
Micro Economic Theory - H.L. Ahuja (S.Chand)
Modern Micro Economics : S.K. Mishra (Pragati Publications)
Economic Theory - A.B.N. Kulkarni & A.B. Kalkundrikar (R.Chand &
Co.) Indian Economy : Rudar Dutt & K.P.M. Sundhram

IT-202 F **Object Oriented Programming Using C++**

L	T	P
3	1	-

Class Work: 50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A: Introduction to C++ and Object oriented Concepts

C++ Standard Library, Basics of a Typical C++ Environment, Pre-processors Directives, Illustrative Simple C++ Programs. Header Files and Namespaces, library files.
Introduction to Objects and Object Oriented Programming, Encapsulation (Information Hiding), Access Modifiers: Controlling access to a class, method, or variable (public, protected, private, package), Other Modifiers, Polymorphism: Overloading,, Inheritance, Overriding Methods, Abstract Classes, Reusability, Class's Behaviors.

Section B: Classes and Data Abstraction:

Introduction, Structure Definitions, Accessing Members of Structures, Class Scope and Accessing Class Members, Separating Interface from Implementation, Controlling Access Function And Utility Functions, Initializing Class Objects: Constructors, Using Default Arguments With Constructors, Using Destructors, Classes : Const(Constant) Object And Const Member Functions, Object as Member of Classes, Friend Function and Friend Classes, Using This Pointer, Dynamic Memory Allocation with New and Delete, Static Class Members, Container Classes And Integrators, Proxy Classes, Function overloading.

Section C: Operator Overloading , Inheritance, and Virtual Functions and Polymorphism:

Fundamentals of Operator Overloading, Restrictions On Operators Overloading, Operator Functions as Class Members vs. as Friend Functions, Overloading, <<, >> Overloading Unary Operators, Overloading Binary Operators.
Introduction to Inheritance, Base Classes And Derived Classes, Protected Members, Casting Base- Class Pointers to Derived- Class Pointers, Using Member Functions, Overriding Base – Class Members in a Derived Class, Public, Protected and Private Inheritance, Using Constructors and Destructors in derived Classes, Implicit Derived –Class Object To Base-Class Object Conversion, Composition Vs. Inheritance.
Introduction to Virtual Functions, Abstract Base Classes And Concrete Classes, Polymorphism, New Classes And Dynamic Binding, Virtual Destructors, Polymorphism,

Dynamic Binding.

Section D: Files and I/O Streams and Templates and Exception Handling:

Files and Streams, Creating a Sequential Access File, Reading Data From A Sequential Access File, Updating Sequential Access Files, Random Access Files, Creating A Random Access File, Writing Data Randomly To a Random Access File, Reading Data Sequentially from a Random Access File. Stream Input/Output Classes and Objects, Stream Output, Stream Input, Unformatted I/O (with read and write), Stream Manipulators, Stream Format States, Stream Error States.

Function Templates, Overloading Template Functions, Class Template, Class Templates and Non-Type Parameters, Templates and Inheritance, Templates and Friends, Templates and Static Members.

Introduction, Basics of C++ Exception Handling: Try Throw, Catch, Throwing an Exception, Catching an Exception, Rethrowing an Exception, Exception specifications, Processing Unexpected Exceptions, Stack Unwinding, Constructors, Destructors and Exception Handling, Exceptions and Inheritance.

COURSE OUTCOMES:

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

CO1 - Be able to understand the difference between object oriented programming and procedural oriented language and data types in C++.

CO2 - Be able to program using C++ features such as composition of objects, Operator overloading, inheritance, Polymorphism etc.

CO3 - students will able to simulate the problem in the subjects like Operating system, Computer networks and real world problems

Text Books:

Object Oriented Programming in Turbo C++ by Robert Lafore ,1994, The WAITE Group Press.
Programming with C++ By D Ravichandran, 2003, T.M.H

Reference books:

Object oriented Programming with C++ by E Balagurusamy, 2001, Tata McGraw-Hill Computing
Concepts with C++ Essentials by Horstmann, 2003, John Wiley,
The Complete Reference in C++ By Herbert Schildt, 2002, TMH.

CSE-208 F **Internet Fundamentals**

L	T	P		
3	1	-	Class Work:	50
			Exam:	100
			Total:	150
			Duration of Exam:	3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A: Electronic Mail and Internet:

Introduction, advantages and disadvantages, Userids, Pass words, e-mail addresses, message components, message composition, mailer features, E-mail inner workings, E-mail management, Mime types, Newsgroups, mailing lists, chat rooms. Introduction to networks and internet, history, Working of Internet, Internet Congestion, internet culture, business culture on internet. Collaborative computing & the internet. Modes of Connecting to Internet, Internet Service Providers(ISPs), Internet address, standard address, domain name, DNS, IP.v6.Modems and time continuum, communications software; internet tools.

Section B: World Wide Web :

Introduction, Miscellaneous Web Browser details, searching the www: Directories search engines and meta search engines, search fundamentals, search strategies, working of the search engines, Telnet and FTP.
Introduction to Browser, Coast-to-coast surfing, hypertext markup language, Web page installation, Web page setup, Basics of HTML & formatting and hyperlink creation.
Using FrontPage Express, Plug-ins.

Section C: Languages:

Basic and advanced HTML, java script language, Client and Server Side Programming in java script. Forms and data in java script, XML basics.
Introduction to Web Servers: PWS, IIS, Apache; Microsoft Personal Web Server. Accessing & using these servers.

Section D: Privacy and security topics:

Introduction, Software Complexity, Encryption schemes, Secure Web document, Digital Signatures, Firewalls.

COURSE OUTCOMES:

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

CO1 - To understand difference between various web server and learn how to work on them.
CO2 - To understand working of digital signatures and firewalls.
CO3 - To work on forms and data in javascript.
CO4 - To know various encryption schemes

Text Book:

Fundamentals of the Internet and the World Wide Web, Raymond Greenlaw and Ellen Hepp – 2001, TMH
Internet & World Wide Programming, Deitel,Deitel & Nieto, 2000, Pearson Education

Reference Books:

Complete idiots guide to java script,. Aron Weiss, QUE, 1997
Network firewalls, Kironjeet syan -New Rider Pub.
www.secinf.com
www.hackers.com
Alfred Glkossbrenner-Internet 101 Computing MGH, 1996

CSE- 210 F Computer Architecture & Organization

L	T	P		
3	1	-	Class Work:	50
			Exam:	100
			Total:	150
			Duration of Exam:	3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A:

Boolean algebra and Logic gates, Combinational logic blocks(Adders, Multiplexers, Encoders, de-coder), Sequential logic blocks(Latches, Flip-Flops, Registers, Counters) Store program control concept, Flynn's classification of computers (SISD, MISD, MIMD); Multilevel viewpoint of a machine: digital logic, micro architecture, ISA, operating systems, high level language; structured organization; CPU, caches, main memory, secondary memory units & I/O; Performance metrics; MIPS, MFLOPS.

Section B: Instruction Set Architecture:

Instruction set based classification of processors (RISC, CISC, and their comparison); addressing modes: register, immediate, direct, indirect, indexed; Operations in the instruction set; Arithmetic and Logical, Data Transfer, Control Flow; Instruction set formats (fixed, variable, hybrid); Language of the machine: 8086 ; simulation using MSAM.

Section C: Basic non pipelined CPU Architecture and Memory Hierarchy & I/O Techniques

CPU Architecture types (accumulator, register, stack, memory/ register) detailed data path of a typical register based CPU, Fetch-Decode-Execute cycle (typically 3 to 5 stage); microinstruction sequencing, implementation of control unit, Enhancing performance with pipelining.

The need for a memory hierarchy (Locality of reference principle, Memory hierarchy in practice: Cache, main memory and secondary memory, Memory parameters: access/ cycle time, cost per bit); Main memory (Semiconductor RAM & ROM organization, memory expansion, Static & dynamic memory types); Cache memory (Associative & direct mapped cache organizations.

Section D: Introduction to Parallelism and Computer Organization [80x86]:

Goals of parallelism (Exploitation of concurrency, throughput enhancement); Amdahl's law; Instruction level parallelism (pipelining, super scaling –basic features); Processor level parallelism (Multiprocessor systems overview).

Instruction codes, computer register, computer instructions, timing and control, instruction cycle, type of instructions, memory reference, register reference. I/O reference, Basics of Logic Design, accumulator logic, Control memory, address sequencing, micro-instruction

formats, micro-program sequencer, Stack Organization, Instruction Formats, Types of interrupts; Memory Hierarchy.

COURSE OUTCOMES:

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

CO1 - Design a circuit for any digital function

CO2 - Use K-map for simplification of Boolean expressions

CO3 - Identify the addressing modes of instructions and calculation of effective address

CO4 - Determine which hardware blocks and control lines are used for different instructions

CO5 - Classify the parallel processors.

Text Books:

Computer Organization and Design, 2nd Ed., by David A. Patterson and John L. Hennessy, Morgan 1997, Kauffmann.

Computer Architecture and Organization, 3rd Edi, by John P. Hayes, 1998, TMH.

Reference Books:

Operating Systems Internals and Design Principles by William Stallings,4th edition, 2001, Prentice-Hall Upper Saddle River, New Jersey

Computer Organization, 5th Edi, by Carl Hamacher, Zvonko Vranesic,2002, Safwat Zaky.

Structured Computer Organisation by A.S. Tanenbaum, 4th edition, Prentice-Hall of India, 1999, Eastern Economic Edition.

Computer Organisation & Architecture: Designing for performance by W. Stallings, 4th edition, 1996, Prentice-Hall International edition.

Computer System Architecture by M. Mano, 2001, Prentice-Hall. Computer Architecture- Nicholas Carter, 2002, T.M.H.

CSE- 212 F **Database Management Systems Lab**

L	T	P		
-	-	3	Class Work:	50
			Exam:	50
			Total:	100
			Duration of Exam:	3 Hrs.

I. Create a database and write the programs to carry out the following operation:

1. Add a record in the database
2. Delete a record in the database
3. Modify the record in the database
4. Generate queries
5. Generate the report
6. List all the records of database in ascending order.

II Develop two menu driven project for management of database system:

1. Library information system

a. Engineering
b. MCA

2. Inventory control system

a. Computer Lab
b. College Store

3. Student information system

c. Academic
d. Finance

4. Time table development system

e. CSE, IT & MCA Departments
f. Electrical & Mechanical Departments

Usage of S/w:

1. VB, ORACLE and/or DB2
2. VB, MSACCESS
3. ORACLE, D2K
4. VB, MS SQL SERVER 2000

Note: At least 5 to 10 more exercises to be given by the teacher concerned.

COURSE OUTCOMES:

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

CO1 - To describe data models and schemas in DBMS

CO2 - To understand the features of database management systems and Relational database.

CO3 - To use SQL- the standard language of relational databases.

CO4 - To understand the functional dependencies and design of the database.

CO5 - To understand the concept of Transaction and Query processing.

IT-206 F **C ++ Programming Lab.**

L	T	P	Class Work:	25
-	-	2	Exam:	25
			Total:	50
			Duration of Exam:	3 Hrs.

Q1. Raising a number n to a power p is the same as multiplying n by itself p times. Write a function called power ( ) that takes a double value for n and an int value for p, and returns the result as double value. Use a default argument of 2 for p, so that if this argument is omitted, the number will be squared. Write a main ( ) function that gets values from the user to test this function.

Q2. A point on the two dimensional plane can be represented by two numbers: an X coordinate and a Y coordinate. For example, (4,5) represents a point 4 units to the right of the origin along the X axis and 5 units up the Y axis. The sum of two points can be defined as a new point whose X coordinate is the sum of the X coordinates of the points and whose Y coordinate is the sum of their Y coordinates.

Write a program that uses a structure called point to model a point. Define three points, and have
the user input values to two of them. Than set the third point equal to the sum of the other two,
and display the value of the new point. Interaction with the program might look like this:
Enter coordinates for P1: 3 4
Enter coordinates for P2: 5 7
Coordinates of P1 + P2 are : 8, 11

Q 3. Create the equivalent of a four function calculator. The program should request the user to enter a number, an operator, and another number. It should then carry out the specified arithmetical operation: adding, subtracting, multiplying, or dividing the two numbers. (It should use a switch statement to select the operation). Finally it should display the result. When it finishes the calculation, the program should ask if the user wants to do another calculation. The response can be 'Y' or 'N'. Some sample interaction with the program might
look like this.

Enter first number, operator, second number: 10/ 3
Answer = 3.333333
Do another (Y/ N)? Y
Enter first number, operator, second number 12 + 100
Answer = 112
Do another (Y/ N) ? N

Q4. A phone number, such as (212) 767-8900, can be thought of as having three parts: the area code (212), the exchange (767) and the number (8900). Write a program that uses a structure to store these three parts of a phone number separately. Call the structure phone. Create two structure variables of type phone. Initialize one, and have the user input a number for the other one. Then display both numbers. The interchange might look like this:
Enter your area code, exchange, and number: 415 555 1212
My number is (212) 767-8900
Your number is (415) 555-1212

Q 5. Create two classes DM and DB which store the value of distances. DM stores distances in

metres and centimeters and DB in feet and inches. Write a program that can read values fortheclass objects and add one object of DM with another object of DB.

Use a friend function to carry out the addition operation. The object that stores the results maybe

a DM object or DB object, depending on the units in which the results are required.

The display should be in the format of feet and inches or metres and cenitmetres depending on

the object on display.

Q 6. Create a class rational which represents a numerical value by two double values- NUMERATOR & DENOMINATOR. Include the following public member Functions:

constructor with no arguments (default).

constructor with two arguments.

void reduce( ) that reduces the rational number by eliminating the highest common factor between the numerator and denominator.

Overload + operator to add two rational number.

Overload >> operator to enable input through cin.

Overload << operator to enable output through cout.

Write a main ( ) to test all the functions in the class.

Q 7. Consider the following class definition

```
class father {
        protected : int age;
public;
        father (int x) {age = x;}
        virtual void iam ( )
        { cout < < "I AM THE FATHER, my age is : "<< age<< end1:}
};
```

Derive the two classes son and daughter from the above class and for each, define iam ( ) to write

our similar but appropriate messages. You should also define suitable constructors for these classes.

Now, write a main ( ) that creates objects of the three classes and then calls iam ( ) for them. Declare pointer to father. Successively, assign addresses of objects of the two derived classes to

this pointer and in each case, call iam ( ) through the pointer to demonstrate polymorphism in action.

Q 8. Write a program that creates a binary file by reading the data for the students from the terminal.

The data of each student consist of roll no., name (a string of 30 or lesser no. of characters) and marks.

Q9. A hospital wants to create a database regarding its indoor patients. The information to store include

a) Name of the patient
b) Date of admission
c) Disease
d) Date of discharge

Create a structure to store the date (year, month and date as its members). Create a base class to store the above information. The member function should include functions to enter

information
and display a list of all the patients in the database. Create a derived class to store the age of the
patients. List the information about all the to store the age of the patients. List the information
about all the pediatric patients (less than twelve years in age).

Q 10. Make a class **Employee** with a name and salary. Make a class **Manager** inherit from **Employee**. Add an instance variable, named department, of type string. Supply a method to **toString** that prints the manager's name, department and salary. Make a class **Executive** inherit from **Manager**. Supply a method **to String** that prints the string **"Executive"** followed by the information stored in the **Manager** superclass object. Supply a test program that tests these classes and methods.

Q11. Imagine a tollbooth with a class called toll Booth. The two data items are a type unsigned int to hold the total number of cars, and a type double to hold the total amount of money collected. A constructor initializes both these to 0. A member function called payingCar ( ) increments the car total and adds 0.50 to the cash total. Another function, called nopayCar ( ), increments the car total but adds nothing to the cash total. Finally, a member function called displays the two totals.

Include a program to test this class. This program should allow the user to push one key to count

a paying car, and another to count a nonpaying car. Pushing the ESC kay should cause
the program to print out the total cars and total cash and then exit.

Q12. Write a function called reversit ( ) that reverses a string (an array of char). Use a for loop that swaps the first and last characters, then the second and next to last characters and so on. The string should be passed to reversit ( ) as an argument.

Write a program to exercise reversit ( ). The program should get a string from the user, call reversit ( ), and print out the result. Use an input method that allows embedded blanks. Test the
program with Napoleon's famous phrase, "Able was I ere I saw Elba)".

Q13. Create some objects of the string class, and put them in a Deque-some at the head of the Deque and some at the tail. Display the contents of the Deque using the forEach ( ) function and a user written display function. Then search the Deque for a particular string, using the first That ( ) function and display any strings that match. Finally remove all the items from the Deque using the getLeft ( ) function and display each item. Notice the order

in which the items are displayed: Using getLeft ( ), those inserted on the left (head) of the Deque are removed in "last in first out" order while those put on the right side are removed in "first in first out" order. The opposite would be true if getRight ( ) were used.

Q 14. Create a base class called shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to the base class, a member function get_data ( ) to initialize base class data members and another member function display_area ( ) to compute and display the area of figures. Make display_area ( ) as a virtual function and redefine this function in the derived classes to suit their requirements.
Using these three classes, design a program that will accept dimensions of a triangle or a rectangle interactively and display the area.

Remember the two values given as input will be treated as lengths of two sides in the case of rectangles and as base and height in the case of triangles and used as follows:
Area of rectangle = x * y
Area of triangle = ½ * x * y

COURSE OUTCOMES:

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

CO1 - Will be able toUse the characteristics of an object-oriented programming language in a program.

CO2 - Will be Abe to Use the basic object-oriented design principles in computer problem solving.

CO3 - Will be able Use the basic principles of software engineering in managing complex software project.

CO4 - Program with advanced features of the C++ programming language.

CSE 214 F **Internets Lab.**

L	T	P
-	-	3

Class Work: 25
Exam: 25
Total: 50
Duration of Exam: 3 Hrs.

Exercises involving:

Sending and receiving mails.

Chatting on the net.

Using FTP and Tel net server.

Using HTML Tags (table, form, image, anchor etc.).

Making a Web page of your college using HTML tags.

Note: At least 10 exercise to be given by the teacher concerned.

Course Outcomes:

At the end of this course student shall be able to

CO1:- practically learn the concepts of internet technology such as e-mail, FTP, Telnet and search engines

CO2:- learn the concepts of HTML , PERL

CO3**:-** learn the concepts Client-Server programming In Java, Network security techniques

CO4: To use the Applet, Java Script and Perl in web design.

GP-202- F

GENERAL FITNESS FOR THE PROFESSION

L	T	P	Class work : 50 Marks
-	-	2	

Quiz & Aptitude Comprehension,
Communication for specifics. Lets Speek
Composition skills- Formal letter writing based on the trends in practice in corporate culture.
Training on etiquettes & manners should be carried further and be observed during the general classes, if required even the faculty should imparted some training on the same.

Course Outcomes

CO1 - Student will be try to perform well not only for academic performance.

CO2 – Student will be able to participate in activities like games and other extracurricular activities

CO3 – Student will be able to write technical paper, presentation and participate in competitions.

M. D. UNIVERSITY, ROHTAK

Scheme of studies & Examination

Bachelor of Technology (Computer Science & Engineering)

Semester - V

'F' Scheme Effective from 2010-11

S. No.	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)
			L	T	P	Total	Marks of Class work	Theory	Practical	Total	
4.	CSE-301 F	Principles of Operating System (CSE,IT)	3	1	-	4	50	100	-	150	**3**
5.	EE-309-F	Microprocessors and Interfacing (EL,CSE,IT,EI, IC, EEE, AEI)	3	1	-	4	50	100	-	150	**3**
6.	CSE-303-F	Computer Graphics (CSE,IT)	3	1	-	4	50	100	-	150	**3**
7.	CSE-305-F	Theory of Automata Computation	3	1		4	50	100	-	150	**3**
8.	CSE 307-F	Web Development (Common with IT – VI Sem)	3	1	-	4	50	100	-	150	**3**
9.	IT-204-F	Multimedia Technologies (Common with IT- IV-Sem)	3	-	-	3	50	100	-	150	**3**
10.	CSE-309-F	Computer Graphics Lab. (CSE,IT)	-	-	3	3	25	-	25	50	**3**
11.	CSE-311-F	Web Development & Core JAVA Lab. th (Common with 6 Sem.-IT)	-	-	2	2	25	-	25	50	**3**
12.	IT-208-F	Multimedia Tech. Lab (Common with IT–IVSem)	-	-	2	2	25	-	25	50	**3**
10	EE-329-F	Microprocessors and Interfacing Lab. (EL,CSE,IT,EI, IC, EEE, AEI)	-	-	2	2	25	-	25	50	**3**
11.	CSE-313-F	O.S. Lab. (CSE, IT)	-	-	2	2	25	-	25	50	-
12	CSE-315-F	Practical Training-I	-	-	2	2	-	-	-	-	-
		TOTAL	**18**	**5**	**13**	**36**	**425**	**600**	**125**	**1150**	

Note:

7. Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.

8. Assessment of Practical Training-I, undergone at the end of IV semester, will be based on seminar, viva-voce, report and certificate of practical training obtained by the student from the industry. According to performance letter grades A, B, C, F are to be awarded. A student who is awarded „F" grade is required to repeat Practical Training.

CSE-301 F Principles of Operating Systems

L	T	P
3	1	-

Class Work	:	50 Marks
Exam	:	100 Marks
Total	:	150 Marks

Duration of Exam : 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Introduction: Introduction to Operating System Concepts (including Multitasking, multiprogramming, multi user, Multithreading

etc)., Types of Operating Systems: Batch operating system, Time-sharing systems, Distributed OS, Network OS, Real Time OS; Various Operating system services, architecture, System programs and calls.

Process Management: Process concept, process scheduling, operation on processes; CPU scheduling, scheduling criteria, scheduling algorithms -First Come First Serve (FCFS), Shortest-Job-First (SJF), Priority Scheduling, Round Robin(RR), Multilevel Queue Scheduling.

Section-B

Memory Management: Logical & Physical Address Space, swapping, contiguous memory allocation, non-contiguous memory allocation paging and segmentation techniques, segmentation with paging; virtual memory management - Demand Paging & Page-Replacement Algorithms; Demand Segmentation.

Section-C

File System: Different types of files and their access methods, directory structures, various allocation methods, disk scheduling and management and its associated algorithms, Introduction to distributed file system.

Process-Synchronization & Deadlocks: Critical Section Problems, semaphores; methods for handling deadlocks-deadlock prevention, avoidance & detection; deadlock recovery.

Section D

I/O Systems: I/O Hardware, Application I/O Interface, Kernel, Transforming I/O requests, Performance Issues and Thresds

Unix System And Windows NT Overview

Unix system call for processes and file system management, Shell interpreter, Windows NT architecture overview, Windows NT file system.

COURSE OUTCOMES:

Upon completing the course, the student will:

CO1 - be familiar with the basics of operating systems;

CO2 - be familiar with various types of operating systems;

CO3 - have experience with process scheduling algorithms;

CO4 - be exposed to the Unix and Windows NT Environment.

Text Books:

th

Operating System Concepts by Silberchatz et al, 5 edition, 1998, Addison-
Wesley. Modern Operating Systems by A. Tanenbaum, 1992, Prentice-Hall.
th
Operating Systems Internals and Design Principles by William Stallings,4 edition, 2001, Prentice-Hall

Reference Books:

Operating System By Peterson , 1985, AW.
Operating System By Milankovic, 1990, TMH.
Operating System Incorporating With Unix & Windows By Colin Ritche, 1974, TMH.
Operating Systems by Mandrik & Donovan, TMH
Operating Systems By Deitel, 1990, AWL.
Operating Systems – Advanced Concepts By Mukesh Singhal , N.G. Shivaratri, 2003, T.M.H

EE-309-F Microprocessors and Interfacing

L T P

Theory : 100 Marks

3 1 - Class work : 50 Marks

Total : 150 Marks

Duration of Exam : 3 Hours

NOTE: For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

THE 8085 PROCESSOR :

Introduction to microprocessor, 8085 microprocessor : Architecture, instruction set, interrupt structure, and Assembly language programming.

Section B

THE 8086 MICROPROCESSOR ARCHITECTURE :

Architecture, block diagram of 8086, details of sub-blocks such as EU, BIU; memory segmentation and physical address computations, program relocation, addressing modes, instruction formats, pin diagram and description of various signals

Section C

INSTRUCTION SET OF 8086 :

Instruction execution timing, assembler instruction format, data transfer instructions, arithmetic instructions, branch instructions, looping instructions, NOP and HLT instructions, flag manipulation instructions, logical instructions, shift and rotate instructions, directives and operators, programming examples.

Section D

INTERFACING DEVICE :

8255 Programmable peripheral interface, interfacing keyboard and seven segment display, 8254 (8253) programmable interval timer, 8259A programmable interrupt controller, Direct Memory Access and 8237 DMA controller.

COURSE OUTCOMES: After the completion of the course the student will be able to:

CO1 - To analyze and design various microprocessor types and their characteristics.

CO2 - To evaluate several applications of Microprocessor.

CO3 - To develop practical understanding, limitations and constraints of the theory they learn.

CO4 - Understand the architecture of 8085 and 8051.

CO5 - Impart the knowledge about the instruction set.

TEXT BOOKS :

1. Microprocessor Architecture, Programming & Applications with 8085 : Ramesh S Gaonkar; Wiley Eastern Ltd.
2. The Intel Microprocessors 8086- Pentium processor : Brey; PHI

REFERENCE BOOKS:

1. Microprocessors and interfacing : Hall; TMH

2. The 8088 & 8086 Microprocessors-Programming, interfacing,Hardware & Applications :Triebel & Singh; PHI
3. Microcomputer systems: the 8086/8088 Family: architecture, Programming & Design : Yu-Chang Liu & Glenn A Gibson; PHI.
4. Advanced Microprocessors and Interfacing : Badri Ram; TMH

CSE -303 F Computer Graphics

L	T	P
3	1	-

Class Work : 50 Marks
Exam : 100 Marks
Total : 150 Marks

Duration of Exam : 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Introduction to Computer Graphics: What is Computer Graphics, Computer Graphics Applications, Computer Graphics

Hardware and software, Two dimensional Graphics Primitives: Points and Lines, Line drawing algorithms: DDA, Bresenham‟s; Circle drawing algorithms: Using polar coordinates, Bresenham‟s circle drawing, mid point circle drawing algorithm; Filled area algorithms: Scanline: Polygon filling algorithm, boundary filled algorithm.

Section-B

Two/Three Dimensional Viewing: The 2-D viewing pipeline, windows, viewports, window to view port mapping; Clipping: point, clipping line (algorithms):- 4 bit code algorithm, Sutherland-cohen algorithm, parametric line clipping algorithm (Cyrus Beck).

Polygon clipping algorithm: Sutherland-Hodgeman polygon clipping algorithm. Two dimensional transformations: transformations, translation, scaling, rotation, reflection, composite transformation.

Section-C

Three-dimensional transformations: Three dimensional graphics concept, Matrix representation of 3-D Transformations, Composition of 3-D transformation.

Viewing in 3D: Projections, types of projections, the mathematics of planner geometric projections, coordinate systems.

Hidden surface removal: Introduction to hidden surface removal. The Z- buffer algorithm, scanline algorithm, area sub-division algorithm.

Section-D

Representing Curves and Surfaces: Parametric representation of curves: Bezier curves, B-Spline curves. Parametric representation of surfaces; Interpolation method.

Illumination, shading, image manipulation: Illumination models, shading models for polygons, shadows, transparency. What is an image? Filtering, image processing, geometric transformation of images.

COURSE OUTCOMES:

Upon completing the course, the student will be able to:

CO1 - Learn the basic concepts of Computer Graphics;

CO2 - Apply the principles and techniques of computer graphics e.g. View Pipeline, Various algorithms for line and cicle drawing;

CO3 - Understand the 3-D Graphics and its representations on the 2-D Computer Screen;

CO4 - Apply computer graphics concepts in the development of computer games, infromation visualization and other applications.

Text Books:

Computer Graphics Principles and Practices second edition by James D. Foley, Andeies van Dam, Stevan K. Feiner and Johb F. Hughes, 2000, Addision Wesley.

nd

Computer Graphics by Donald Hearn and M.Pauline Baker, 2 Edition, 1999, PHI

Reference Books:

Procedural Elements for Computer Graphics – David F. Rogers, 2001, T.M.H Second Edition

Fundamentals of 3Dimensional Computer Graphics by Alan Watt, 1999, Addision Wesley.

Computer Graphics: Secrets and Solutions by Corrign John, BPB

Graphics, GUI, Games & Multimedia Projects in C by Pilania & Mahendra, Standard Publ.

Computer Graphics Secrets and solutions by Corrign John, 1994, BPV

Introduction to Computer Graphics By N. Krishanmurthy T.M.H 2002

CSE-305 F Theory of Automata Computation

L	T	P				
3	1	-	**Class Work**	:	50	Marks
			Exam	:	100	Marks
			Total	:	150	Marks

Duration of Exam : 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Finite Automata and Regular Expressions: Finite State Systems, Basic Definitions Non-Deterministic finite automata

(NDFA), Deterministic finite automata (DFA), Equivalence of DFA and NDFA Conversion of NFA to DFA Finite automata with E-moves, Regular Expressions, Equivalence of finite automata and Regular Expressions, Regular expression conversion and vice versa.

Introduction to Machines: Concept of basic Machine, Properties and limitations of FSM. Moore and mealy Machines, Equivalence of Moore and Mealy machines, state and prove Arden‟s Method.

Section-B

Properties of Regular Sets: The Pumping Lemma for Regular Sets, Applications of the pumping lemma, Closure properties of regular sets, Myhill-Nerode Theorem and minimization of finite Automata, Minimization Algorithm.

Grammars: Definition, Context free and Context sensitive grammar, Ambiguity regular grammar, Reduced forms, Removal of useless Symbols, unit production and null production Chomsky Normal Form (CNF), Griebach Normal Form (GNF).

Section-C

Pushdown Automata: Introduction to Pushdown Machines, Application of Pushdown Machines

Turing Machines: Deterministic and Non-Deterministic Turing Machines, Design of T.M, Halting problem of T.M., PCP Problem.

Section-D

Chomsky Hierarchies: Chomsky hierarchies of grammars, Unrestricted grammars, Context sensitive languages, Relation between

languages of classes.

Computability: Basic concepts, Primitive Recursive Functions.

COURSE OUTCOMES:

Upon completing the course, the student will:

CO1 - Be familiar with the basics concepts in theory of computation;

CO2 - Be able to construct finite state machines and the equivalent regular expressions.

CO3 - Be able to construct pushdown automata and their equivalent context free grammers.

CO4 - be exposed to the advanced concepts of theory of automata computation.

Text Book:

Introduction to automata theory, language & computations- Hopcroaft & O.D.Ullman, R Mothwani, 2001, AW

Reference Books:

Theory of Computer Sc.(Automata, Languages and computation):K.L.P.Mishra & N.Chandrasekaran, 2000, PHI.

Introduction to formal Languages & Automata-Peter Linz, 2001, Narosa Publ..

Fundamentals of the Theory of Computation- Principles and Practice by RamondGreenlaw and H. James Hoover, 1998, Harcourt India Pvt. Ltd..

Elements of theory of Computation by H.R. Lewis & C.H. Papaditriou, 1998, PHI.

Introduction to languages and the Theory of Computation by John C. Martin 2003, T.M.H.

CSE- 307 F Web Development

L	T	P
3	1	-

Class Work : 50 Marks
Exam : 100 Mark
Total : 150 Marks

Duration of Exam : 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

JAVA: Introduction to JAVA, Basics Data Types, Operators, Classes and Methods, Access Specifiers, Arrays, Inheritance, Polymorphism, Threads, Package and Interfaces, Exception Handling, IO Applets, Generics and Collections

Section B

Basic terms: WWW, XML, HTML, XHTML, W3C.

Descriptive markup: Meta tags for common tasks, semantic tags for aiding search, the doubling code and RDF. Separating style from structure with style sheets: Internal style specifications within HTML, External linked style specification using CSS, page and site design considerations.

Client side programming: Introduction to the JavaScript syntax, the JavaScript object model, Event handling, Output in JavaScript, Forms handling, miscellaneous topics such as cookies, hidden fields, and images; Applications.

Section C

Server side programming: Introduction to Server Side Technologies CGI/ASP/JSP., Programming languages for server Side Scripting, Configuring the server to support CGI, its applications; Input /output operations on the WWW. Forms processing, (using PERL / VBScript / JavaScript)

Section D

Other dynamic content Technologies: Introduction to ASP & JSP, Delivering multimedia over web pages, The VRML idea, The Java phenomenon-applets and Servlets, issues and web development.
Introduction to Microsoft .NET Technology and its comparison with the competing Technologies

Course Outcome:

By the end of course the student will be able to:

CO1 - Write simple programs of java using classes and constructs.
CO2 - Write programs using interfaces and packages.
CO3 - Can create web sites for college and newspaper agencies.

.

Text Books:

1. JAVA: The Complete Reference, Herbert Schildt
2. Beginning XHTML by Frank Boumpery, Cassandra Greer, Dave Raggett, Jenny Raggett, Sebastian Schnitzenbaumer & ted Wugofski, 2000, WROX press (Indian Shroff Publ. SPD) 1st edition

3. HTML & XHTML: The Definitive Guide by Chuck Musciano, Bill Kennedy, 2000, 4th Edi.
Reference books:
XHTML Black Book by Steven Holzner, 2000
CGI Programming on the World Wide Web. O'Reilly Associates.
Web Technologies By Achyut S Godbole , Atul Kahate, 2003, T.M.H
Scott Guelich, Shishir Gundararam, Gunther Birzniek; CGI Programing with Perl 2/e
O'Reilly.
Doug Tidwell, James Snell, Pavel Kulchenko; Programming Web services, O'Reilly.
Intranets by James D.Cimino, 1997, Jaico Publ.
Internet and Web Technologies – Raj Kamal, 2002, T.M.H

IT-204 F Multimedia Technologies

L	T	P
3	1	-

Class Work : 50 Marks
Exam : 100 Marks
Total : 150 Marks

Duration of Exam :3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Basics of Multimedia Technology: Computers, communication and entertainment; multimedia an introduction; framework for multimedia systems; multimedia devices; CD- Audio, CD-ROM, CD-I, presentation devices and the user interface; multimedia presentation and authoring; professional development tools; LANs and multimedia; internet, World Wide Web & multimedia distribution network-ATM & ADSL; multimedia servers & databases; vector graphics; 3D graphics programs; animation techniques; shading; anti aliasing; morphing; video on demand.

Section-B

Image Compression & Standards: Making still images; editing and capturing images; scanning images; computer color models; color palettes; vector drawing; 3D drawing and rendering; JPEG-objectives and architecture; JPEG-DCT encoding and quantization, JPEG statistical coding, JPEG predictive lossless coding; JPEG performance; overview of other image file formats as GIF, TIFF, BMP, PNG etc.

Section-C

Unit-3: Audio & Video: Digital representation of sound; time domain sampled representation; method of encoding the analog signals; subband coding; fourier method; transmission of digital sound; digital audio signal processing; stereophonic & quadraphonic signal processing; editing sampled sound; MPEG Audio; audio compression & decompression; brief survey of speech recognition and generation; audio synthesis; musical instrument digital interface; digital video and image compression; MPEG motion video compression standard; DVI technology; time base media representation and delivery.

Section-D

Virtual Reality: Applications of multimedia, intelligent multimedia system, desktop virtual reality, VR operating system, virtual environment displays and orientation making; visually coupled system requirements; intelligent VR software systems. Applications of environment in various fields.

COURSE OUTCOMES:

Upon completing the course, the student will:

CO1 - Execute the operation of equipment and/or procedures associated with multiple facets of multimedia. These may include: digital-photography, page layout, typography, video, audio, interactive media, and web design.

CO2 - Gain experience with multimedia processes using current, recognized, industry-standard software as well as computer hardware and software associated in both Mac and Windows platforms.

CO3 - Demonstrate an advanced knowledge of photo editing including: image manipulation, colour correction, compositing, toning, and preparing for distribution

CO4 - Successful students will be familiar with techniques and resources in order to obtain knowledge and understanding of new developments in multimedia technology.

CO5 - Students will demonstrate knowledge of the legalities involved in multimedia creation.

Text Books:

An introduction, Villamil & Molina, Multimedia Mc Milan, 1997
multimedia: Sound & Video, Lozano, 1997, PHI, (Que)

Reference Books:

Multimedia: Production, planning and delivery, Villamil & Molina,Que, 1997
Multimedia on the PC, Sinclair,BPB
Multimedia: Making it work, Tay Vaughan, fifth edition, 1994, TMH.
Multimedia in Action by James E Shuman, 1997, Wadsworth Publ.,
Multimedia in Practice by Jeff coate Judith, 1995,PHI.
Multimedia Systems by Koegel, AWL
Multimedia Making it Work by Vaughar, etl.
Multimedia Systems by John .F. Koegel, 2001, Buford.
Multimedia Communications by Halsall & Fred, 2001,AW.

CSE-309 F Computer Graphics Lab.

L	T	P
-	-	2

Class Work : 25 Marks
Exam : 25 Marks
Total : 50 Marks

Duration of Exam : 3 Hrs.

List of programs to be developed

1. Write a program for 2D line drawing as Raster Graphics Display.
14. Write a program for circle drawing as Raster Graphics Display.
15. Write a program for polygon filling as Raster Graphics Display
16. Write a program for line clipping.
17. Write a program for polygon clipping.
18. Write a program for displaying 3D objects as 2D display using perspective transformation.
19. Write a program for rotation of a 3D object about arbitrary axis.
20. Write a program for Hidden surface removal from a 3D object.

1. Write a program for 2D line drawing as Raster Graphics Display.

2. Write a program for circle drawing as Raster Graphics Display.

3. Write a program for polygon filling as Raster Graphics Display

4. Write a program for line clipping.

5. Write a program for polygon clipping.

6. Write a program for displaying 3D objects as 2D display using perspective transformation.

7. Write a program for rotation of a 3D object about arbitrary axis.

8. Write a program for Hidden surface removal from a 3D object.

COURSE OUTCOMES:

Upon completing the course, the student will be able :

CO1 - To create graphics in C.

CO2 - To perform different Transformation operations.

CO3 - To differentiate between different standard algorithms.

CO4 - To understand the 2D and 3D transformations

Note:

At least 5 to 10 more exercises to be given by the teacher concerned.

CSE-311 F Web Development & Core JAVA Lab.

L	T	P
-	-	2

Class Work : 25 Marks
Exam : 25 Marks
Total : 50 Marks

Duration of Exam : 3 Hrs.

Java programs using classes & objects and various control constructs such as loops etc , and data structures such as arrays , structures and functions.

Java programs for creating Applets for display of Images ,Texts and Animation

Programs related to interfaces & packages

Input output & Random files programs in java Java

programs using Event driven concept Programs related to

Network Programming

Development of Web site for the college or newspaper agency.

COURSE OUTCOMES:

Upon completing the course, the student will be able :

CO1 - To understand about different JAVA concepts like encapsulation, polymorphism.

CO2 - To use different user defined and pre defined data structures of JAVA.

CO3 - To create a full fledged website using JAVA .

Books recommended for Lab.

Java Elements – Principles of Programming in Java , Duane A. Bailey , Duane W. Bailey, 2000, T.M.H
The Java Handbook by Patrick Naughton, TMH, N.Delhi

IT-208 F Multimedia Technologies Lab.

L	T	P
-	-	2

Class Work	:	25 Marks
Exam	:	25 Marks
Total	:	50 Marks

Duration of Exam : 3 Hrs.

14. Write a program to justify a text entered by the user on both the left and right hand side. For example, the test " An architect may have a graphics program to draw an entire building but be interested in only ground floor", can be justified in 30 columns as shown below. An architect may have a Graphics programs draw an Entric building but be interested in only ground floor.

15. Study the notes of a piano and stimulate them using the key board and store them in a file.

16. Write a program to read a paragraph and store it to a file name suggested by the author.

17. Devise a routine to produce the animation effect of a square transforming to a triangle and then to a circle.

18. Write a program to show a bitmap image on your computer screen.

19. Create a web page for a clothing company which contains all the details of that company and at-least five links to other web pages.

20. Write a program by which we can split mpeg video into smaller pieces for the purpose of sending it over the web or by small capacity floppy diskettes and then joining them at the destination.

21. Write a program to simulate the game of pool table.

22. Write a program to simulate the game Mine Sweeper.

23. Write a program to play "wave" or "midi" format sound files.

COURSE OUTCOMES:

Upon completing the course, the student will be able to :

CO1 - To use different tools.

CO2 - To simulate different effects.

CO3 - To do multimedia programming effectively.

CO4 - Differentiate between different multimedia standards and use them accordingly

Note

At least 5 to 10 more exercises to be given by the teacher concerned.

EE-329-F Microprocessors and Interfacing Lab

L	T	P
0	0	2

Class Work : 25 Marks
Exam : 25 Marks
Total : 50 Marks

Duration of Exam : 3 Hrs

List Of Experiments:

12. Study of 8085 Microprocessor kit.

13. Write a program using 8085 and verify for :
Addition of two 8-bit numbers.
Addition of two 8-bit numbers (with carry).

14. Write a program using 8085 and verify for :
8-bit subtraction (display borrow)
16-bit subtraction (display borrow)

15. Write a program using 8085 for multiplication of two 8- bit numbers by repeated addition method. Check for minimum number of additions and test for typical data.

16. Write a program using 8085 for multiplication of two 8- bit numbers by bit rotation method and verify.

17. Write a program using 8085 for division of two 8- bit numbers by repeated subtraction method and test for typical data.

18. Write a program using 8085 for dividing two 8- bit numbers by bit rotation method and test for typical data.

19. Study of 8086 microprocessor kit

20. Write a program using 8086 for division of a defined double word (stored in a data segment) by another double Word division and verify.

21. Write a program using 8086 for finding the square root of a given number and verify.

22. Write a program using 8086 for copying 12 bytes of data from source to destination and verify.

23. Write a program using 8086 and verify for:
Finding the largest number from an array.
Finding the smallest number from an array.

24. Write a program using 8086 for arranging an array of numbers in descending order and verify.

25. Write a program using 8086 for arranging an array of numbers in ascending order and verify.

26. Write a program for finding square of a number using look-up table and verify.

.

16. Write a program to interface a two digit number using seven-segment LEDs. Use 8085/8086 microprocessor and 8255 PPI.

17. Write a program to control the operation of stepper motor using 8085/8086 microprocessor and 8255 PPI.

COURSE OUTCOMES:

Upon completing the course, the student will be :

CO1 - Familiar with the instruction set of 8085 and 8086.

CO2 - To provide interfacing of 8085 with 8255 etc

CO3 - To write program using the micro processors.

CO4 - To use the different microprocessor kits.

CO5 - To evaluate several applications of Microprocessor.

Note:

At least ten experiments have to be performed in the semester out of which seven experiments should be performed from above list. Remaining three experiments may either be performed from the above list or designed & set by the concerned institution as per the scope of the syllabus of EE-309-C.

CSE-313 F Operating Systems Lab.

L	T	P
-	-	2

Class Work	:	25 Marks
Exam	:	25 Marks
Total	:	50 Marks

Duration of Exam : 3 Hrs.

- Study of WINDOWS 2000 Operating System.
- Administration of WINDOWS 2000 (including DNS, LDAP, Directory Services)
- Study of LINUX Operating System (Linux kernel, shell, basic commands pipe & filter commands).
- Administration of LINUX Operating System.
- Writing of Shell Scripts (Shell programming).
- AWK programming.

COURSE OUTCOMES:

Upon completing the course, the student will:

CO1 - Be able to perform different operations using command on windows and linux system.

CO2 - Be able to differentiate between user and administrative proveeledge.

CO3 - Be able to write different shell programs.

M.D. UNIVERSITY, ROHTAK

Scheme of studies & Examination
Bachelor of Technology (Computer Science & Engineering) Semester - VI
'F' Scheme Effective from 2010-11

S. No.	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)
			L	T	P	Marks of Class work	Total	Theory	Practical	Total	
1	CSE-302 F	Principles of Software Engineering (CSE,IT)	3	1	-	4	50	100	-	150	**3**
		Intelligent Systems (CSE,IT)	3	1	-	4	50	100	-	150	**3**
2	CSE-304 F	Computer Networks (CSE, EL & Common with 5 Sem. – IT, AEI)	3	1	-	4	50	100	-	150	**3**
3	IT-305 F	Systems Programming & System Administration (Common with 5 Sem. – IT)	3	1		4	50	100	-	150	**3**
4	IT-303 F	Analysis & Design of Algorithms	3	1	-	4	50	100	-	150	**3**
5	CSE-306 F	Digital System Design (EL,EE,CSE,EI, IC, AEI)	3	1	-	4	50	100	-	150	**3**
6	EE-310-F	Intelligent Systems Lab. (CSE,IT)	-	-	3	3	25	-	25	50	**3**
7	CSE-308 F	Digital System Design Lab. (EL,EI, IC,CSE, AEI)	-	-	3	3	25	-	25	50	3
		Computer Network lab	-	-	2	2	25	-	25	50	3
8	EE-330-F	Visual Programming Lab.	-	-	2	2	25	-	25	50	3
9	CSE-310-F CSE-312-F	General Proficiency	-	-	-	-	50	-	-	50	3
		TOTAL	**18**	**6**	**10**	**34**	**450**	**600**	**100**	**1150**	-

9 GP-302-F

Note:

1. Each student has to undergone practical training of 6 weeks during summer vacation and its evaluation shall be carried out in the VII semester.
2. Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.

CSE-302 F Principles of Software Engineering

L	T	P
3	1	-

Class Work : 50 Marks
Exam : 100 Marks
Total : 150 Marks

Duration of Exam : 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Introduction: The process, software products, emergence of software engineering, evolving role of software, software life cycle models, Software Characteristics, Applications, Software crisis.

Software project management: Project management concepts, software process and project metrics Project planning, project

size estimation metrics, project estimation Techniques, empirical estimation techniques, COCOMO- A Heuristic estimation techniques, staffing level estimation, team structures, staffing, risk analysis and management, project scheduling and tracking.

Section-B

Requirements Analysis and specification requirements engineering, system modeling and simulation Analysis principles modeling, partitioning Software, prototyping: , Prototyping methods and tools; Specification principles, Representation, the software requirements specification and reviews Analysis Modeling: Data Modeling, Functional modeling and information flow: Data flow

diagrams, Behavioral Modeling; The mechanics of structured analysis: Creating entity/ relationship diagram, data flow model, control flow model, the control and process specification; The data dictionary; Other classical analysis methods.

System Design: Design concepts and principles: the design process: Design and software quality, design principles; Design concepts: Abstraction, refinement, modularity, software architecture, control hierarchy, structural partitioning, data structure, software procedure, information hiding; Effective modular design: Functional independence, Cohesion, Coupling; Design Heuristics for effective modularity; The design model; Design documentation.

Section-C

Architectural Design: Software architecture, Data Design: Data modeling, data structures, databases and the data warehouse, Analyzing alternative Architectural Designs ,architectural complexity; Mapping requirements into a software architecture; Transform flow, Transaction flow; Transform mapping: Refining the architectural design.

Testing and maintenance: Software Testing Techniques, software testing fundamentals: objectives, principles, testability; Test case design, white box testing, basis path testing: Control structure testing: Black box testing, testing for specialized environments ,architectures and applications. Software Testing Strategies: Verification and validation, Unit testing, Integration testing,; Validation testing, alpha and beta testing; System testing: Recovery testing, security testing, stress testing, performance testing; The art of debugging, the debugging process debugging approaches. Software re-engineering , reverse engineering ,restructuring, forward engineering.

Section-D

Software Reliability and Quality Assurance :Quality concepts, Software quality assurance , SQA activities; Software

reviews: cost impact of software defects, defect amplification and removal; formal technical reviews: The review meeting, review reporting and record keeping, review guidelines; Formal approaches to SQA; Statistical software quality assurance; software reliability: Measures of reliability and availability ,The ISO 9000 Quality standards: The ISO approach to quality assurance systems, The ISO 9001 standard, Software Configuration Management. Computer Aided software Engineering: CASE, building blocks, integrated case environments and architecture, repository.

Course Outcomes:

CO1 - Students will be able to understand basic concepts of software engineering.
CO2 - Students will be able to implement Software life cycle models and have a knowledge of different phases of Software life cycle.
CO3 - Students will be able to calculate the cost & staff for a particular project at the start.
CO4 - Students will be able to schedule their software in an appropriate way & make it track.
CO5 - Students will be able to make an unambiguous SRS (software requirement specification) after collecting requirements of any client.

Text Book:

Software Engineering – A Practitioner‟s Approach, Roger S. Pressman, 1996, MGH.

Reference Books:

Fundamentals of software Engineering, Rajib Mall, PHI
th

Software Engineering by Ian sommerville, Pearson Edu, 5 edition, 1999, AW,
Software Engineering – David Gustafson, 2002, T.M.H

Software Engineering Fundamentals Oxford University, Ali Behforooz and Frederick J. Hudson 1995 JW&S,
An Integrated Approach to software engineering by Pankaj jalote , 1991 Narosa,

CSE-304 F Intelligent Systems

L	T	P			
3	1	-	**Class Work**	:	50 Marks
			Exam	:	100 Marks
			Total	:	150 Marks

Duration of Exam : 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Foundational issues in intelligent systems: Foundation and history of AI, Ai problems and techniques – AI programming languages, introduction to LISP and PROLOG- problem spaces and searches, blind search strategies, Breadth first- Depth first- heuristic search techniques Hill climbing: best first- A * algorithm AO* algorithm-game tree, Min max algorithms, game playing- alpha beta pruning.

Section-B

Knowledge representation issues, predicate logic- logic programming, semantic nets- frames and inheritance, constraint propagation, representing knowledge using rules, rules based deduction systems.
Reasoning under uncertainty, review of probability, Baye‟s probabilistic interferences and Dempster shafer theory, Heuristic methods,

Section-C

Symbolic reasoning under uncertainty, Statistical reasoning, Fuzzy reasoning, Temporal reasoning, Non monotonic reasoning. Planning, planning in situational calculus, representation for planning, partial order planning algorithm,

Section-D

Learning from examples, discovery as learning, I earning by analogy, explanation based learning, neural nets, genetic algorithms. Principles of Natural language processing, rule based systems architecture, Expert systems, knowledge acquisition concepts, AI application to robotics, and current trends in intelligent systems.

Course outcomes:

After undergoing the course, Students will be able to:

CO1 - Students will able to learn the use of AI in different real life problems.

CO2 - Use the heuristic search techniques for AI related problems.

CO3 - Students will develop an ability to analyze and formalize the problem (as a state space, graph, etc.) and select the appropriate search method.

CO4 - Students will be able to choose an appropriate problem-solving method

CO5 - Students will be able to know how knowledge is represented in computer system and different knowledge-representation scheme.

Text Book:

Artificial Intelligence: A Modern Approach,. Russell & Norvig. 1995, Prentice Hall.

Reference Books:

Artificial Intelligence, Elain Rich and Kevin Knight, 1991, TMH.
Artificial Intelligence-A modern approach, Staurt Russel and peter norvig, 1998, PHI.
Artificial intelligence, Patrick Henry Winston:, 1992, Addition Wesley 3rd Ed.,

CSE -306 F Analysis and Design of Algorithms

L	T	P
3	1	-

Class Work : 50 Marks
Exam : 100 Marks
Total : 150 Marks

Duration of Exam : 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Brief Review of Graphs, Sets and disjoint sets, union, sorting and searching algorithms and their analysis in terms of space and time complexity.

Divide and Conquer: General method, binary search, merge sort, qick sort, selection sort, Strassen‟s matrix multiplication algorithms and analysis of algorithms for these problems.

Section-B

Greedy Method: General method, knapsack problem, job sequencing with dead lines, minimum spanning trees, single souce paths and analysis of these problems.

Dynamic Programming: General method, optimal binary search trees, O/I knapsack, the traveling salesperson problem.

Section-C

Unit-5: Back Tracking: General method, 8 queen‟s problem, graph colouring, Hamiltonian cycles, analysis of these problems. **Unit-6: Branch and Bound:** Method, O/I knapsack and traveling salesperson problem, efficiency considerations. Techniques for

algebraic problems, some lower bounds on parallel computations.

Section-D

Unit-7: NP Hard and NP Complete Problems: Basic concepts, Cook‟s theorem, NP hard graph and NP scheduling problems some simplified NP hard problems.

Course Outcomes:

CO1 - Able to analyze and compare complexity for different types of algorithms for different types of problems.
CO2 - Apply mathematical preliminaries to the analyses and design stages of different types of algorithms.
CO3 - Choose among different types of data structures the best one for different types of problems.
CO4 - Recognize the general principles and good algorithm design techniques for developing efficient computer algorithms.
CO5 - Familiarizing students with specific algorithms for a number of important computational problems like sorting, searching, and graphs, etc.

Text Books:

Fundamental of Computer algorithms, Ellis Horowitz and Sartaj Sahni, 1978, Galgotia Publ.,
Introduction To Algorithms, Thomas H Cormen, Charles E Leiserson And Ronald L Rivest: 1990, TMH

Reference Books:

The Design and Analysis of Computer Algorithm, Aho A.V. Hopcroft J.E., 1974, Addison Wesley. Algorithms-
The Construction, Proof and Analysis of Programs, Berlion, P.Bizard, P., 1986. Johan Wiley & Sons, Writing

Efficient Programs, Bentley, J.L., PHI
Introduction to Design and Analysis of Algorithm, Goodman, S.E. & Hedetnieni, 1997, MGH.
Introduction to Computers Science- An algorithms approach , Jean Paul Trembley, Richard B.Bunt, 2002,
T.M.H. Fundamentals of Algorithms: The Art of Computer Programming Voll, Knuth, D.E.: 1985, Naresh Publ.

IT-305 F Computer Networks

L	T	P
3	1	-

Class Work : 50 Marks
Exam : 100 Marks
Total : 150 Marks

Duration of Exam :3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

OSI Reference Model and Network Architecture: Introduction to Computer Networks, Example networks ARPANET,

Internet, Private Networks, Network Topologies: Bus-, Star-, Ring-, Hybrid -, Tree -, Complete -, Irregular –Topology; Types of Networks : Local Area Networks, Metropolitan Area Networks, Wide Area Networks; Layering architecture of networks, OSI model, Functions of each layer, Services and Protocols of each layer

Section-B

TCP/IP: Introduction, History of TCP/IP, Layers of TCP/IP, Protocols, Internet Protocol, Transmission Control Protocol , User

Datagram Protocol, IP Addressing, IP address classes, Subnet Addressing, Internet Control Protocols, ARP, RARP, ICMP, Application Layer, Domain Name System, Email – SMTP, POP,IMAP; FTP, NNTP, HTTP, Overview of IP version 6.

Section-C

Local Area Networks: Introduction to LANs, Features of LANs, Components of LANs, Usage of LANs, LAN Standards, IEEE

802 standards, Channel Access Methods, Aloha, CSMA, CSMA/CD, Token Passing, Ethernet, Layer 2 & 3 switching, Fast Ethernet and Gigabit Ethernet, Token Ring, LAN interconnecting devices: Hubs, Switches, Bridges, Routers, Gateways.

Wide Area Networks: Introduction of WANs, Routing, Congestion Control, WAN Technologies, Distributed Queue Dual Bus (DQDB),

Section-D

Synchronous Digital Hierarchy (SDH)/ Synchronous Optical Network (SONET), Asynchronous Transfer Mode (ATM), Frame Relay.,Wireless Links.

Introduction to Network Management: Remote Monitoring Techniques: Polling, Traps, Performance Management, Class of Service, Quality of Service, Security management, Firewalls, VLANs, Proxy Servers, Introduction to Network Operating Systems: Client-Server infrastructure, Windows NT/2000.

Course Outcomes:

By the end of the course the students will be able to:

CO1 - Independently understand basic computer network technology.

CO2 - Understand and explain Data Communications System and its components.

CO3 - Identify the different types of network topologies and protocols.

CO4 - Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.

CO5 - Identify the different types of network devices and their functions within a network

Text Book:

Computer Networks (3rd edition), Tanenbaum Andrew S., International edition, 1996.

Reference Books:

Data Communications, Computer Networks and Open Systems (4th edition), Halsall Fred, 2000, Addison Wesley, Low Price Edition.

Business Data Communications, Fitzgerald Jerry,.

ndComputer Networks – A System Approach, Larry L. Peterson & Bruce S. Davie, 2 Edition

Computer Networking – ED Tittel , 2002, T.M.H.

IT-303 F Systems Programming & System Administration

L	T	P					
3	1	-	**Class Work**	:	50	Marks	
			Exam	:			100 Marks
			Total	:			150 Marks

Duration of Exam :3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Evolution of Components Systems Programming, Assemblers, Loaders, Linkers, Macros, Compilers. software tools, Text editors, Interpreters and program generators, Debug Monitors, Programming environment.

Compiler: Brief overview of compilation process, Incremental compiler, Assembler: Problem statement, single phase and two phase assembler, symbol table; Loader schemes, compile and go Loader, general loader schemes, absolute loader, Subroutine linkage, Reallocating loader, Direct linkage Loader, Binders, Linking loader, overlays.

Section-B

Macro language and macro-processor, macro instructions, features of macro facility, macro instruction arguments, conditional macro expansion, macro calls with macro instruction defining macros.

Theoretical Concept of Unix Operating System: Basic features of operating system; File structure: CPU scheduling; Memory management: swapping, demand paging; file system: block and fragments, inodes, directory structure; User to user communication.

Section-C

Getting Started with Unix: User names and groups, logging in; Format of Unix commands; Changing your password; Characters with special meaning; Unix documentation; Files and directories; Current directory, looking at the directory contents, absolute and relative pathnames, some Unix directories and files; Looking at the file contents; File permissions; basic operation on files; changing permission modes; Standard files, standard output; Standard input, standard error; filters and pipelines; Processes; finding out about processes; Stopping background process; Unix editor vi.

Test Manipulation: Inspecting files; File statistics; Searching for patterns; Comparing files; Operating on files; Printing files; Rearranging files; Sorting files; Splitting files; Translating characters; AWK utility.

Section-D

Shell Programming: Programming in the Borne and C-Shell; Wild cards; Simple shell programs; Shell variables; Shell programming constructs; interactive shell scripts; Advanced features.

System Administration: Definition of system administration; Booting the system; Maintaining user accounts; File systems and special files; Backups and restoration; Role and functions of a system manager. Overview of the linux. operating system

Course Outcomes:

CO1 - The students will be able to understand basic terminology used in system programming.

CO2 - The students will be familiar with the basic concepts and the applications of system programs.

CO3 - The students will be able to understand role of Assembler, compiler, linker, loader, text editor and debugger during program execution.

CO4 - The students will be able to understand basic concepts of Operating Systems, UNIX development, concept of kernel and shell, different subsystems of kernel, types of shells.

CO5 - The students will be able to understand and execute various types of commands on the standard shell viz. basic commands, directory and file related, pipe and filter related, process related, user communication related and the system administration related commands.

Text Books:

Systems Programming by Donovan, TMH.

The unix programming environment by Brain Kernighen & Rob Pike, 1984, PHI & Rob Pike.
Design of the Unix operating system by Maurich Bach, 1986, PHI.
Introduction to UNIX and LINUX by John Muster, 2003, TMH.

Reference Book:

Advanced Unix programmer‟s Guide by Stephen Prato, BPB
Unix- Concept and applications by Sumitabha Das, 2002, T.M..H

EE-310-F DIGITAL SYSTEM DESIGN

L	T	P				
3	1	0	**Class Work**	:	50 Marks
			Exam	:	100 Marks
			Total	:	150 Marks

Duration of Exam : 3 HRS

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section-A

Introduction: Introduction to Computer-aided design tools for digital systems. Hardware description languages; introduction to

VHDL, data objects, classes and data types, Operators, Overloading, logical operators.Types of delays Entity and Architecture declaration. Introduction to behavioural, dataflow and structural models.

Section-B

Vhdl Statements: Assignment statements, sequential statements and process, conditional statements, case statement Array and loops, resolution functions, Packages and Libraries, concurrent statements.

Subprograms: Application of Functions and Procedures, Structural Modelling, component declaration, structural layout and generics.

Section-C

Combinational Circuit Design: VHDL Models and Simulation of combinational circuits such as Multiplexers, Demultiplexers, encoders, decoders, code converters, comparators, implementation of Boolean functions etc.

Sequential Circuits Design :VHDL Models and Simulation of Sequential Circuits Shift Registers, Counters etc.

Section-D

Design Of Microcomputer : Basic components of a computer, specifications, architecture of a simple microcomputer system, implementation of a simple microcomputer system using VHDL

Design With Cplds And Fpgas :Progr ammable logic devices : ROM, PLAs, PALs, GAL, PEEL, CPLDs and FPGA. Design implementation using CPLDs and FPGAs

Course Outcomes:

CO1 - To able to understand hardware description language for digital system design.

CO2 - To develop skills in digital systems design

CO3 - Able to acquire knowledge about combinational and sequential circuits.

CO4 - Ability to identify and code the module using different modelling styles.

CO5 - Able to understand the advantage of using packages in coding.

Reference Books:

J. IEEE Standard VHDL Language Reference Manual (1993).
K. Digital Design and Modelling with VHDL and Synthesis : KC Chang; IEEE Computer Society Press.
L. "A VHDL Primmer" : Bhasker; Prentice Hall 1995.
M. "Digital System Design using VHDL" : Charles. H.Roth ; PWS (1998).
N. "VHDL-Analysis & Modelling of Digital Systems" : Navabi Z; McGraw Hill.
O. VHDL-IV Edition :Perry; TMH (2002)
P. "Introduction to Digital Systems" : Ercegovac. Lang & Moreno; John Wiley (1999).
Q. Fundamentals of Digital Logic with VHDL Design : Brown and Vranesic; TMH (2000)
R. Modern Digital Electronics- III Edition: R.P Jain; TMH (2003).

CSE-308 F Intelligent System Lab.

L	T	P
-	-	2

Class Work	:	25 Marks
Exam	:	25 Marks
Total	:	50 Marks

Duration of Exam : 3 Hrs.

1. Study of PROLOG.
Write the following programs using PROLOG.

c. Write a program to solve 8 queens problem.

d. Solve any problem using depth first search.

e. Solve any problem using best first search.

f. Solve 8-puzzle problem using best first search

g. Solve Robot (traversal) problem using means End Analysis.

h. Solve traveling salesman problem.

Course Outcomes:

At the end of this course students shall be able to

CO1**:-** learn Programming using PROLOG

CO2**:-** learn Programming using LISP

CO3 – write programs for pattern recognition, complex decision making, use of natural language, expert systems etc

Note:

At least 5 to 10 more exercises to be given by the teacher concerned.

EE-330-F DIGITAL SYSTEM DESIGN LAB

L	T	P
0	0	2

CLASS WORK	:	25 Marks
EXAM	:	25 Marks
TOTAL	:	50 Marks

DURATION OF EXAM : 3 HRS

List Of Experiments:

1. Design all gates using VHDL.

g. Write VHDL programs for the following circuits, check the wave forms and the hardware generated

1 half adder

2 full adder

h. Write VHDL programs for the following circuits, check the wave forms and the hardware generated

1 multiplexer

2 demultiplexer

i. Write VHDL programs for the following circuits, check the wave forms and the hardware generated

1 decoder

2 encoder

j. Write a VHDL program for a comparator and check the wave forms and the hardware generated

6 Write a VHDL program for a code converter and check the wave forms and the hardware generated

7. Write a VHDL program for a FLIP-FLOP and check the wave forms and the hardware generated

8. Write a VHDL program for a counter and check the wave forms and the hardware generated

9. Write VHDL programs for the following circuits, check the wave forms and the hardware generated

a. register

b. shift register

10. Implement any three (given above) on FPGA/CPLD kit

Course Outcomes:

At the end of this course students shall be able to

CO1 Study Windows API's and appreciate their relationship with MFC classes

CO2 implement simple applications in Visual Basic

CO3 understand and implement the event driven requirement of user and providing a solution via Visual Basic Programming

Note :

Ten experiments are to be performed out of which at least seven experiments should be performed from above list. Remaining three experiments may either be performed from the above list or designed & set by the concerned institution as per the scope of the syllabus.

CSE-310 F **Computer Network Lab.**

L	**T**	**P**
-	-	3

Class Work	:	25 Marks
Exam	:	25 Marks
Total	:	50 Marks

Duration of Exam : 3 Hrs

This course provides students with hands on training regarding the design, troubleshooting, modeling and evaluation of computer networks. In this course, students are going to experiment in a real test-bed networking environment, and learn about network design and troubleshooting topics and tools such as: network addressing, Address Resolution Protocol (ARP), basic troubleshooting tools (e.g. ping, ICMP), IP routing (e,g, RIP), route discovery (e.g. traceroute), TCP and UDP, IP fragmentation and many others. Student will also be introduced to the network modeling and simulation, and they will have the opportunity to build some simple networking models using the tool and perform simulations that will help them evaluate their design approaches and expected network performance.

Course Outcomes:

At the end of this course student shall be able to

CO1: Familiar with transmission media, connector, Hubs, Switches and installation of NIC.

CO2: Implement client server applications with TCP/UDP Socket Programming in a standalone machine

CO3: Implement client server applications with TCP/UDP Socket Programming in a network.

CSE-312 F **Visual Programming Lab.**

L	**T**	**P**				
-	-	3	**Class Work**	:	25	Marks
			Exam	:	25	Marks
			Total	:	50	Marks

Duration of Exam : 3 Hrs

Study of Visual Basic 6.0.NET and Visual C++ 6.0.NET.

1) Study Windows API"s. Find out their relationship with MFC classes. Appreciate how they are helpful in finding complexities of windows programming.
2) Get familiar with essential classes in a typical (Document- view architecture) VC++ Program and their relationship with each other.
3) Create an SDI application in VC++ that adds a popup menu to your application which uses File drop down menu attached with the menu bar as the pop-up menu. The pop-up menu should be displayed on the right click of the mouse.
4) Create an SDI application in VC++ using which the user can draw atmost 20 rectangles in the client area. All the rectangles that are drawn should remain visible on the screen even if the window is refreshed. Rectangle should be drawn on the second click of the left mouse button out of the two consecutive clicks. If the user tries to draw more than 20 rectangles, a message should get displayed in the client area that " No more rectangles can be drawn"
5) Create an application in VC++ that shows how menu items can be grayed, disabled and appended at run time.
6) Write a program in VC++ to implement serialization of inbuilt and user defined objects.
7) Write a program in VC++ to create archive class object from CFile class that reads and stores a simple structure (record).
8) Make an Active X control in VC++ derived from a standard control.
9) Write a program in VB to implement a simple calculator.
10) Create a simple database in MS Access Database /Oracle and a simple database application in VB that shows database connectivity through DAO and ADO.
11) Write a simple program that displays an appropriate message when the illegal operation is performed using error handling technique in VB.
12) Write a program in VB to create a notepad.
13) Create a DLL in VB.

Bright students may do the following exercises:

14) Write a program in VC++ to implement a simple calculator.
15) Write a program in VC++ to create a static link library and a dynamic link library.
16) Create a simple database in MS Access Database and a simple database application in VC++ that shows database connectivity through ADO model.
17) Make an Active X control of your own using VB.
18) With the help of VB, create an object of excel application and implement any action on it.

Course Outcomes:

At the end of this course students shall be able to
CO1 Study Windows API's and appreciate their relationship with MFC classes
CO2 implement simple applications in Visual Basic
CO3 understand and implement the event driven requirement of user and providing a solution via Visual Basic Programming

M.D.UNIVERSITY, ROHTAK
Scheme of Studies / Examination
Bachelor of Technology (Computer Science & Engineering)
SEMESTER VII
'F' Scheme Effective from 2012-13

Sl. No.	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)
			L	T	P	Total	Marks of Class work	Theory	Practical	Total	
1	CSE-401 F	Advanced Computer Architecture	3	1	-	4	50	100	-	150	3
2	CSE-403 F	Software Project Management (CSE,IT)	3	1	-	4	50	100	-	150	3
3	CSE-405 F	Compiler Design	3	1	-	4	50	100	-	150	3
4	CSE-407 F	Neural Networks	3	1	-	4	50	100	-	150	3
5	CSE-409 F	Advanced Java (CSE, IT)	3	1	-	4	50	100	-	150	3
6		Elective	3	1	-	4	50	100	-	150	3
7	CSE-411 F	Compiler Design Lab	-	-	2	2	25	-	50	75	3
8	CSE-413 F	Neural Networks Using MATLAB	-	-	2	2	25	-	50	75	3
9	CSE-415 F	Advanced JAVA Lab (CSE, IT)	-	-	3	3	50	--	100	150	3
10	CSE-417 F	PRATICAL TRAINING-II	-	-	-	-	-	-	-	-	-
		TOTAL	**18**	**6**	**7**	31	400	600	200	1200	

List of Electives

1.	CSE-423 F	Distributed Operating System
2.	IT-465F	Network Security & Management
3.	CSE-421 F	Real Time Systems
4.	CSE-435 F	Advanced Database Management Systems
5.	IT-467 F	Computer Software Testing
6.	IT-473 F	High Speed Networks

Note:

13. Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.

14. Student will be permitted to opt for any one elective run by the department. However, the departments will offer only those electives for which they have expertise. The choice of the students for any elective shall not be a binding for the department to offer, if the department does not have expertise.

15. Assessment of Practical Training -II, carried out at the end of VI semester, will be based on seminar, viva- voce and project report of the student. According to performance letter grades A, B, C, F are to be awarded. A student who is awarded 'F' grade is required to repeat Practical Training.

CSE-401 F **ADVANCED COMPUTER ARCHITECTURE**

L	T	P
3	1	-

Class Work: 50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

Architecture And Machines: Some definition and terms, interpretation and microprogramming. The instruction set, Basic data types, Instructions, Addressing and Memory. Virtual to real mapping. Basic Instruction Timing.
Time, Area And Instruction Sets: Time, cost-area, technology state of the Art, The Economics of a processor project: A study, Instruction sets, Professor Evaluation Matrix

Section B

Cache Memory Notion: Basic Notion, Cache Organization, Cache Data, adjusting the data for cache organization, write policies, strategies for line replacement at miss time, Cache Environment, other types of Cache. Split I and D-Caches, on chip caches, Two level Caches, write assembly Cache, Cache references per instruction, technology dependent Cache considerations, virtual to real translation, overlapping the Tcycle in V-R Translation, studies. Design summary.

Section C

Memory System Design: The physical memory, models of simple processor memory interaction, processor memor y modeling using queuing theory, open, closed and mixed-queue models, waiting time, performance, and buffer size, review and selection of queuing models, processors with cache.

Section D

Concurrent Processors: Vector Processors, Vector Memory, Multiple Issue Machines, Comparing vector and Multiple Issue processors.
Shared Memory Multiprocessors: Basic issues, partitioning, synchronization and coherency, Type of shared Memor y multiprocessors, Memory Coherence in shared Memory Multiprocessors.

COURSE OUTCOMES:

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

CO1 - Describe the principles of computer design.
CO2 - Classify instruction set architectures.
CO3 - Describe the operation of performance enhancements such as pipelines, dynamic scheduling, branch prediction, caches, and vector processors.
CO4 - Describe the operation of virtual memory.
CO5 - Describe modern architectures such as RISC, Super Scalar, VLIW (very large instruction word), multi-core and multi-cpu systems.

Text Book:

Advance computer architecture by Hwang & Briggs, 1993, TMH.

Reference Books:

Pipelined and Parallel processor design by Michael J. Fiynn – 1995, Narosa.

CSE-403 F **SOFTWARE PROJECT MANAGEMENT**

L	T	P
3	1	-

Class Work:	50
Exam:	100
Total:	150

Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

Introduction to Software Project Management (SPM): Definition of a Software Project (SP), SP Vs. other types of projects activities covered by SPM, categorizing SPs, project as a system, management control, requirement specification, information and control in organization.

Stepwise Project planning: Introduction, selecting a project, identifying project scope and objectives, identifying project infrastructure, analyzing project characteristics, identifying project products and activities, estimate efforts each activity, identifying activity risk, allocate resources, review/ publicize plan.

Section B

Project Eva lua tion & Estimation: Cost b enefit analysis, cash flow forecasting, co s t benefit evaluation techniques, risk evaluation. Selection of an appropriate project report; Choosing technologies, choice of process model, structured methods, rapid application development, water fall-, V-process-, spiral-models. Prototyping, delivery. Albrecht function point analysis.

Activity planning & Risk Management: Objectives of activity planning, project schedule, projects and activities, sequencing and scheduling activities, network planning model, representation of l agged activities, adding the time dimension, backward and forward pass, identifying critical path, activity throat, shortening project , precedence networks.

Risk Management: Introduction, the nature of risk, managing risk, risk identification, risk analysis, reducing the risks, evaluating risks to the schedule, calculating the z values..

Section C

Resource allocation &Monitoring the control: Introduction, the nature of resources, identifying resource requirements, scheduling resources creating critical paths, counting the cost, being specific, publishing the resource schedule, cost schedules, the scheduling sequence.

Monitoring the control: Introduction, creating the frame work, collecting the data, visualizing progress, cost monitoring, earned value, prioritizing monitoring, getting the project back to target, change control.

Managing contracts and people: Introduction, types of contract, stages in contract, placement, typical terms of a contract, contract management, acceptance, Managing people and organizing terms: Introduction, understanding behavior, organizational behavior: a back ground, selecting the right person for the job, instruction in the best methods, motivation, working in groups, becoming a team, decision making, leadership, organizational structures, conclusion, further exercises..

Section D

Software quality: Introduction, the place of software quality in project planning, the importance of software qualit y, defining software quality, ISO 9126, Practical software quality measures, product versus process quality management, external standards, techniques to help enhance software quality.

Study of Any Software Project Management software: viz Project 2000 or equivalent

Course Outcomes:

By the end of the course the students will be able to: -

CO1 - Manage the scope, cost, timing, and quality of the project, at all times focused on project success as defined by project stakeholders.

CO2 - Align the project to the organization's strategic plans and business justification throughout its lifecycle.

CO3 - Identify project goals, constraints, deliverables, performance criteria, control needs, and resource requirements in consultation with stakeholders.
CO4 - Interact with team and stakeholders in a professional manner, respecting differences, to ensure a collaborative project environment.
CO5 - Adapt project management practices to meet the needs of stakeholders from multiple sectors of the economy (i.e. consulting, government, arts, media, and charity organizations).

Text Book:

1. Software Project Management (2nd Edition), by Bob Hughes and Mike Cotterell, 1999, TMH

Reference Books:

9. Software Engineering – A Practitioner's approach, Roger S. Pressman (5th edi), 2001, MGH
10. Software Project Management, Walker Royce, 1998, Addison Wesley.
11. Project Management 2/c. Maylor
12. Managing Global software Projects, Ramesh, 2001, TMH.
13. Software Project Management, Bharat Bhusan Agarwal, Shivangi Dhall, University Science Press

CSE-405-F COMPILER DESIGN

L	T	P
3	1	-

Class Work: 50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

Introduction To Compilers: Compilers and translators need of translators, structure of compiler :its different phases, Compiler construction tools.

Lexical Analysis: Role of lexical analyzer, design of lexical analyzer, regular expressions , Specification and recognition of tokens, input buffering, A language specifying lexical analyzer. Finite automata, conversion from regular expression to finite automata, and vice versa, minimizing number of states of DFA, Implementation of lexical analyzer.

Section B

Syntax Analysis: Role of parsers, context free grammars, definition of parsing.

Parsing Technique: Shift- reduce parsing, operator precedence parsing, top down par sing, predictive parsing.

Section

C LR parsers, SLR, LALR and Canonical LR parser.

Syntax Directed Translations: Syntax directed definition, construction of syntax trees, syntax directed translation scheme, implementation of syntax directed translation, three address code, quadruples and triples.

Section D

Symbol Table & Error Detection And Recovery: Symbol tables, its contents and data structure for symbol tables; trees, arrays, linkedlists, hash tables. Errors, lexical phase error, syntactic phase error, semantic error.

Code Optimization & Code Generation: Code generation, forms of objects code, machine dependent code, optimization, register allocation for temporary and user defined variables.

COURSE OUTCOMES:

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

CO1 - By the end of the course the students will be able : -

CO2 - To apply the knowledge of lex tool & yacc tool to devleop a scanner & parser.

CO3 - To design & conduct experiments for Intermediate Code Generation in compiler.

CO4 - To design & implement a software system for backend of the compiler.

CO5 - To deal with different translators.

Text Books:

3. Compilers Principle, Techniques & Tools - Alfread V. AHO, Ravi Sethi & J.D. Ullman; 1998Addison Wesley.

Reference Books:

5. Theory and practice of compiler writing, Tremblay & Sorenson, 1985, Mc. Graw Hill.
6. System software by Dhamdere, 1986, MGH.
7. Principles of compiler Design, Narosa P ublication
8. Elements compiler Design, Dr. M. Joseph, University Science Press

CSE-407- F **Neural Networks**

L	T	P	Class Work:50
3	1	-	Exam: 100
			Total: 150
			Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

Overview of biological neurons: Structure of biological neurons relevant to ANNs.

Fundamental concepts of Artificial Neural Networks: Models of ANNs; Feedforward & feedback networks; learning rules; Hebbian learning rule, perception learning rule, delta learning rule, Widrow-Hoff learning rule, correction learning rule, Winner –lake all elarning rule, etc.

Section B

Single layer Perception Classifier: Classification model, Features & Decision regions; training & classification using discrete perceptron, algorithm, single layer continuous perceptron networks for linearlyseperable classifications.

Multi-layer Feed forward Networks: linearly non-seperable pattern classification, Delta learning rule for multi-perceptron layer, Generalized delta learning rule, Error back-propagation training, learning factors, Examples.

Section C

Single layer feed back Networks: Basic Concepts, Hopfield networks, Training & Examples.

Associative memories: Linear Association, Basic Concepts of recurrent Auto associative memor y: rentrieval algorithm, storage algorithm; By directional associative memory,Architecture, Association encoding & decoding, Stability.

Section D

Self organizing networks: UN supervised learning of clusters, winner-take-all learning, recall mode, Initialisation of weights, seperability limitations

COURSE OUTCOMES:

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

CO1 - Knowledge and understanding:

CO2 - Understanding principles of neural networks and fuzzy logic fundamentals;

CO3 - Design the required and related systems .

CO4 - achieves an understanding of the technical potential and the advantages and limitations of the learning and self organizing systems of today

can apply the methods and produce applications in their working life

Text Books:

1. Introduction to artificial Neural systems by Jacek M. Zurada, 1994, Jaico Publ. House.

Reference Books:

4. “Neural Networks :A Comprehensive formulation”, Simon Haykin, 1998, AW
5. “Neural Networks”, Kosko, 1992, PHI.
6. “Neural Network Fundamentals” – N.K. Bose , P. Liang, 2002, T.M.H

7. Neural Network , T.N.Shankar, University Science Press
8. Neuro Fuzzy Systems, Lamba, V.K., University Science Press

CSE-409-F **ADVANCED JAVA**

L T P	Class Work	: 50
3 1 0	Exam.	: 100
	Total	: 150
	Duration of Exam.	: 3 hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

CORE JAVA

Introduction to Java, Data types, variables, operators, Arrays, Control Statements, Classes & Methods, Inheritance, Exception Handling, Multithreading, Collections, I/O streams, AVVT & Apolet Programming.

NETWORKING

Connecting to a Server, Implementing Servers, Sending E-Mail, Making URL Connections, Advanced Socket Programming

Section B

DATABASE NETWORKING

The Design of JDBC. The Structured Query Language, JDBC Installation, Basic JDBC Programming Concepts, Query Execution, Scrollable and Updatable Result Sets, Metadata, Row Sets, Transactions, Advanced Connection Management, Introduction of LDAP

DISTRIBUTED OBJECTS

The Roles of Client and Server, Remote Method Invocations, Setup for Remote Method Invocation, Parameter Passing in Remote Methods Server Object Activation, Java IDL and CCRA, Remote Method Calls with SOAP

Section C

SWING

Lists, Trees, Tables, Styled Text Components, Progress Indicators, Component Organizers

AWT

The Rendering Pipeline, Shapes, Areas, Strokes, Paint, Coordinate Transformations, Clipping, Transparency and Composition, Rendering Hints, Readers and Writers for Images, Image Manipulation, Printing. The Clipboard, Drag and Drop

Section D

JAVABEANS COMPONENTS

Beans, The Bean-Writing Process, Using Beans to Build an Application, Naming Patterns for Bean Components and Events Bean Property Tubes Beaninfo Classes Property Editors Cuatomizes

SECURITY

Class Loaders, Bytecode Verification, Security Managers and Permissions, Digital Signatures, Code Signing, Encryption

COURSE OUTCOMES:

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

CO1 - Develop Swing-based GUI

CO2 - Develop client/server applications and TCP/IP socket programming

CO3 - Update and retrieve the data from the databases using SQL

CO4 - Develop distributed applications using RMI

CO5 - Develop component-based Java software using JavaBeans

TEXT & REFERENCE BOOK:

1. Core Java™ 2, Volume II-Advanced Features, 7th Edition by Cay Horetmann, Gary Cornelll Pearson Publisher, 2004
21. Professional Java Programming by Brett Spell, WROX Publication
22. Advanced Java 2 Platform, How to Program, 2nd Edition, Harvey. M. Dietal, Prentice Hall
23. Advanced Java, Gajendra Gupta , Firewall Media

CSE-411-F **COMPILER DESIGN LAB**

L	T	P		
-	-	2	Class Work:	25
			Exam:	50
			Total:	75

Duration of Exam: 3Hrs.

24. Practice of LEX/YACC of compiler writing.
25. Write a program to check whether a string belong to the grammar or not.
26. Write a program to generate a parse tree.
27. Write a program to find leading terminals.
28. Write a program to find trailing terminals.
29. Write a program to compute FIRST of non-terminal.
30. Write a program to compute FOLLOW of non-terminal.
8. Write a program to check whether a grammar is left Recursion and remove left Recursion.
27. Write a program to remove left factoring.
28. Write a program to check whether a grammar is operator precedent.
29. To show all the operations of a stack.
30. To show various operations i.e. red, write and modify in a text file.

Note : At least 10 programs are required to be developed in the semester.

COURSE OUTCOMES:

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

CO1 - Acquire knowledge in different phases and passes of Compiler.
CO2 - Use the Compiler tools like LEX, YACC, etc.
CO3 - Design different types of compiler tools to meet the requirements of the realistic constraints of compilers.
CO4 - Parser and its types i.e. Top-down and Bottom-up parsers. Construction of LL, SLR, CLR and LALR parse table.
CO5 - Build symbol table and intermediate code.

CSE-413 F **Neural Network Using Matlab.**

L	T	P		
-	-	2	Class Work:	25
			Exam:	50
			Total:	75
			Duration of Exam: 3 Hrs.	

To study some basic neuron models and learning algorithms by using Matlab's neural network toolbox. The following demonstrations

- Simple neuron and transfer functions
- Neuron with vector input
- Decision boundaries
- Perceptron learning rule
- Classification with a 2-input perceptron (note - there's an error in the text here:it says there are 5
- input vectors, but really there are only 4)
  Linearly non-separable vectors

Try to understand the following things:

4. How the weights and bias values affect the output of a neuron.
5. How the choice of activation function (or transfer function) affects the output of a neuron. Experiment with the following functions: identity (purelin), binary threshold (hardlim, hardlims) and sigmoid (logsig, tansig).
6. How the weights and bias values are able to represent a decision boundary in the feature space.
7. How this decision boundary changes during training with the perceptron learning rule.
8. How the perceptron learning rule works for linearly separable problems.
9. How the perceptron learning rule works for non-linearly separable problems.

COURSE OUTCOMES:

CO1 - Understand basics of fuzzy system, genetic algorithms & their relations.
CO2 - Apply genetic algorithms & artificial neural N/ws as computation tools
CO3 - To solve a variety of problems in various areas of interest ranging from optimization problems to text analytics.
CO4 - To implement neural network techniques, fuzzy logic approaches

CSE-- 415-F **ADVANCED JAVA LAB.**

L	T	P		
-	-	3	Class Work:	50
			Exam:	50

Total: 100

Duration of exam: 3 hrs.

Development of programs relating to :

- **JDBC**
- **Servlets**
- **Beans**
- **RMI**
- **JSP**

COURSE OUTCOMES:

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

CO1 - Implement Server side programming.
CO2 - Develop dynamic software components.
CO3 - Develop database application.
CO4 - Design and develop powerful GUI based components.
CO5 - Create Animation using Applet, Thread and AWT controls.

CSE-423 F DISTRIBUTED OPERATING SYSTEM

L	T	P
3	1	-

Class Work:50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

Introduction on : In t ro d uc t ion on to D istr ib uted Syst e m, Go als o f D ist ributed s yste m, Har d w ar e and Software concepts , Design issues. Communication in distributed system: Layered protocols, ATM networks, Client – Server model, Remote Procedure Calls and Group Communication. Middleware and Distributed Operating S ystems.

Section B

Synchronization in Distributed System: Clock synchronization, Mutual Exclusion, Election algorithm, the Bully algorithm, a Ring algorithm, Atomic Transactions, Deadlock in Distributed Systems, Distributed Deadlock Prevention, Distributed Deadlock Detection .

Section C

Processes and Processors in distributed systems: Threads, System models, Processors Allocation, Scheduling in Distributed System, Real Time Distributed Systems.

Distributed file systems: Distributed file s ystem Design, Distributed file system Implementation, Trends in Distributed file systems.

Section D

Distributed Shared Memory: What is shared memory, Consistency models, Page based distributed shared memory, shared variables distributed shared memory.

Case study MACH: Introduction to MACH, process management in MACH, communication in MACH, UNIX emulation in MACH.

Course Outcomes:

CO1 - Students will learn about distributed systems design and implementation. They will be exposed to various areas of research in distributed systems and mobile computing systems.

CO2 - Modify existing open source kernels in terms of functionality or features used. They will learn about designing and implementing fault tolerant distributed systems.

CO3 - The students should be able to demonstrate the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system.

CO4 - Identify the different features of real time and mobile operating systems.

CO5 - Learn the various resource management techniques like the use of distributed shared memory and other resources for distributed systems.

Text Book:

1 Distributed Operating System – Andrew S. Tanenbaum, PHI.

2 Operating System Concepts , P.S.Gill, Firewall Media

IT-465 F **NETWORK SECURITY &MANAGEMENT**

L	T	P
3	1	-

Class Work:50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Section A

Introduction: Codes and Ciphers – Some Classifical systems – Stiatistical theory of cipher systems- Complexity theory of crypto systems – Stream ciphers, Block ciphers.

Stream Ciphers: Rotor based system – shift register based systems – Design considerations for stream ciphers – Cryptanals ysis of stream ciphers – Combined eneryption and encoding. Block Ciphers – DES and variant, modes of use of DES.

Section B

Public key systems – Knapsack systems – RSK – Diffie Hellman Exchange – Authentication and Digital signatures, Elliptic curve based systems.

System Identification and clustering: Cryptology of speech signals – narrow band and wide band systems – Analogue & Digital Systems of speech encr yption.

Section C

Security: Hash function – Authentication: Protocols – Digital Signature standards. Electronics Mail Security – PGP (Pretty Good Privacy) MIME, data Compression technique. IP Securit y: Architecture, Authentication Leader, Encapsulating security Payload – Key Management. Web security: Secure Socket Layer & Transport Layer security, Secure electronics transactions. Firewalls Design principle, established systems.

Section D

Telecommunication Network Architecture, TMN management layers, Management information Model, Management servicing and functions, Structure of management information and TMN information model, SNMP v1, SNMP2 & SNMP3, RMON1 & 2, Broadband Network Management (ATM, HFC, DSL), ASN

Course Outcome

CO1 - By the end of the course, students should be able to understand the concept of security and its differentiation with its related terms.

CO2 - By the end of the course, students should be able to understand why security is important for internet based applications and various security threats in these areas.

CO3 - By the end of the course, students should be able to understand various methods to provide physical security.

Text Books:

1. Cryprotography and Network Security: Principal & Practices, 2nd Edition by Upper Saddle River, PHI
2. Network Management Principles & Practices by Subramanian, Mani (AWL)
3. SNMP, Stalling, Willian (AWL)

Reference Books:

b SNMP: A Guide to Network Management (MGH)
c Telecom Network Management by H.H. Wang (MGH)
d Network Management by U. Dlack (MGH)

CSE-435 F **ADVANCED DATABASE MANAGEMENT SYSTEMS**

L	T	P
3	1	-

Class Work:50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

Unit I

Data Models: EER model and relationship to the OO model, Object Oriented Databases, Overview of concepts, object identity, object structure, type constructors, encapsulation of operations, methods and persistence, type hierarchies and inheritance, complex objects, overview of Object model of ODMG, object Relational databases, Databases design for an ORDBMS, Nested relational Model, storage and access method.

Query Optimisation: Query Execution Algorithms, Heuristics in Query Execution, Cost Estimation in Query Execution, Semantic Query Optimisation.

Unit II

Database Transactions and Recovery Procedures: Transaction Processing Concepts, Transaction and System Concepts, Desirable Properties of a Transaction, Schedules and Recoverability, Serializability of Schedules, Transaction Support in SQL, Recovery Techniques, Database Backup, Concurrency control, locking techniques for Concurrency Control, Concurrency Control Techniques, Granularity of Data Items.

Client Server Computing: Client Server Concepts, 2-Tier and 3-Tier Client Server Systems, Client/Server Architecture and the Internet, Client /Database Server Models, Technology Components of Client Server Systems, Application Development in Client Server Systems.

Unit III

Distributed and Parallel Databases: Reliability and Commit protocols, Fragmentation and Distribution, View Integration, Distributed database design, Distributed algorithms for data management, Heterogeneous and Federated Database Systems. Parallel database Architectures and their merits and demerits.

Deductive and Web Databases: Recursive Queries, Prolog/Datalog Notation, Basic inference Mechanism for Logic Programs, Deductive Database Systems, Deductive Object Oriented Database Systems; Web or Internet Databases: Introduction, uses, Building blocks of Web, tools, advantages and disadvantages.

Unit IV

Emerging Databases: Multimedia database: Definition, need of Multimedia databases, MDBMS, Multimedia database components and structure, Multimedia database queries and applications; Mobile database: definition, their need, Characteristics, architecture, uses and limitations of mobile databases; Digital libraries: Introduction, Objectives, types, components, myths, services, advantages, limitations, and comparison with traditional libraries; Spatial databases: Basic concepts, need, types and relationships, architecture, queries, indexing techniques, advantages and disadvantages of spatial databases; Temporal database: basic concepts, characteristics, components, merits and demerits,

Course outcome:-

CO1 - The students will be able to understand DBMS Components, Advantages and Disadvantages.
CO2 - The students will be able to understand Data modeling: ER, EER, Network, Hierarchical and Relational data models.
CO3 - The students will be able to understand normalisation.

CO4 - The students will be able to understand general strategies for query processing, query processor, syntax analyzer, Query decomposition, Heuristic Query optimization.
CO5 - The students will be able to understand transaction concept, schedules, serializability, locking and concurrency control protocols.

Text Book:

1 Fundamentals of Database Systems (3 edition), Elmasri R. and Navathe S.B., 2000, Addison Wesley, Low Priced Edition.

Reference Book:

7. Database System Concepts by A. Silbershatz, H.F. Korth and S. Sudarshan, 3rd edition, 1997, McGraw-Hill, International Edition.

IT-467 F **COMPUTER SOFTWARE TESTING**

L	T	P
3	1	-

Class Work: 50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions

Section A

Fundamentals and Testing types: First, second and later cycles of testing. Objectives and limits of testing. Overview of S/W development stages, Planning and Design stages and testing during these stages. Glass box code, Regression and Black box testing, Software errors, Categories of software error.

Reporting and analyzing bugs: Problem reports, Content and Characteristics of Problem Report, analysis and Tactics for analyzing a reproducible bug. Making a bug reproducible

Section B

Problem Tracking System: Objective of Problem Tracking System, tasks of the system, Problem tracking overview, users of the tracking system, mechanics of the database

Test Case Design: Characteristics of a good test, equivalence classes and boundary values, visible state transitions, Race conditions and other time dependencies, load testing. Error guessing, Function equivalence testing, Regression Testing, General issues in configuration testing, printer testing

Section C

Localization and User Manuals testing: Translated text expands, Character sets, Keyboards, Text filters, Loading, saving, importing, and exporting high and low ASCII, Operating system Language, Hot keys, Error message identifiers, Hyphenation rules, Spelling rules, Sorting Rules, Uppercase and Lowercase conversion, Printers, Sizes of paper, CPU's and video, Rodents, Data formats and setup options, Rulers and measurements, Culture-bound Graphics and output, European product compatibility, Memory availability, automated testing, Testing User Manuals, Effective documentation, documentation tester's objective, How testing documentation contributes to software reliability

Section D

Testing Tools and Test Planning: Fundamental tools, Automated acceptance and regression tests, standards, Translucent box testing Overall objective of the test plan: product or tool? Detailed objective , type of test, strategy for developing components of test planning documents, components of test planning documents, documenting test materials

S/W Development tradeoffs and models, Quality-related costs, The development time line, Product design, alpha, Pre-beta, Beta, User Interface freeze, Pre-final, Final integrity testing, Project post-mortems, Legal consequences of defective software, Managing and role of a testing group, independent test agencies

Course Outcomes:

CO1 - The students will be able to understand the concepts of software testing and its techniques.

CO2 - Knowledge of verification and validation activities.

CO3 - Study of black box and white box testing techniques.

CO4 - Study the concept of regression testing and its techniques.

CO5 - Study of object oriented testing techniques.

Text Book:

e. Testing Computer Software, by Cem Kaner, Jack Falk,Hung Quoc Nguyen, 1999, Pub: Wiley, (Second Edition).

IT-473 F **High Speed Networks**

L	T	P
3	1	-

Class Work:50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

UNIT 1

Gigabit Ethernet Overview of fast Ethernet, Gigabit Ethernet – overview, specifications, layered protocol architecture, network design using Gigabit Ethernet, applications, 10GB Ethernet – overview, layered protocol architecture, applications.

Wireless Networks Existing and emerging standards, Wireless LAN(802.11), Broadband Wireless(802.16), Bluetooth(802.15) their layered protocol architecture and security. Mobile Networks – GSM, CDMA and GPRS

UNIT 2

Fibre Channel Fibre channel physical characteristics – topologies & ports, layered protocol architecture, class of service, technology comparison, SAN overview and architecture.

Frame Relay Protocol architecture, frame format, routing, congestion control.

UNIT 3

ISDN & B-ISDN ISDN - Channels, interfaces, addressing, protocol architecture, services and B-ISDN

ATM Virtual circuits, cell switching, reference model, traffic management.

UNIT 4

Internet Layer IPV4 and IPV6, IP addressing, ARP, IP routing(OSPF & BGP), internet multicasting, mobile IP.

Transport Layer UDP/TCP protocols & architecture, TCP connection management, wireless TCP.

Application Layer DNS, FTP, Voice over IP, audio & video compression.

COURSE OUTCOMES:

After the successful completion of this course, the student shall be able to

CO1 - Learn high speed networks, Gigabit Ethernet and wireless networks
CO2 - Learn about physical characteristics of fiber channel and frame relay
CO3 - Learn protocols and architecture of Internet Layer, Transport Layer and Application Layer
CO4 - Learn the concepts of ISDN, B-ISDN and ATM

Reference & Text Books:

5. James P.G. Sterbenz and Joseph D. Touch, High-Speed Networking: A Systematic Approach to High-Bandwidth Low Latency Communication, Wiley, 2001
6. **William-Stallings,** High-Speed Networks TCP/IP and ATM Design Principles, Prentice Hall; 1st edition, 1998.

CSE-421 F **REAL TIME SYSTEMS**

L	T	P
3	1	-

Class Work:50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

UNIT I

Introduction: Definition, Issues in Real Time Computing, Structure of a Real Time System. Task Classes and Timing Parameters, Common myths about real time systems, Characteristics and Applications of Real time Systems, Examples of Real time systems.

Performance measures for real time systems: Traditional performance measures, Performability, Cost functions and hard Deadlines

UNIT II

Task Assignment and Scheduling: Introduction, Various types of scheduling algorithms: Cyclic, Deterministic, Capacity based Dynamic Priority, Value Function etc. Scheduling Real time tasks in Multiprocessors, Fault tolerant Scheduling

UNIT III

Real Time Databases: Basic definitions, Real time Vs General Purpose databases,

Main Memory databases, concurrency control issues, databases for hard real time systems

Real Time Communication: Introduction, Basic Concepts, Real time Communication Applications, Real time Communication in LAN, Protocols: Contention based protocols, Token based protocols, Deadlines based protocols, Stop and Go Multihop protocol, The polled bus protocol, Hierarchical round robin protocol.

UNIT IV

Real Time operating System: Introduction, Features of RTOS, Unix and Windows NT as RTOS, Comparison of Unix and Windows NT as RTOS

Real Time Knowledge Based Systems and Programming Languages: Introduction, Why use real time expert systems, Requirements of real time expert system, Real time Expert system applications, Expert system tools, Characteristics of a Real time Language, Case study of ADA as a Real Time Language.

COURSE OUTCOME

CO1 - The students will be able to understand the basics and importance of real-time systems
CO2 - The students will be familiar with the issues and challenges in the embedded system design
CO3 - The students should be able to understand the recent trends in embedded systems design.
CO4 - The students will be able to familiar with the host and target machine.
CO5 - Able to understand the release time, deadline and timing constraints.

References:

11. Real Time Systems: Liu ; Pearson Education

12. Real Time Systems: C. M. Krishna and Kang G. Shin; McGraw Hill

13. Real Time Systems: Satinder Bal Gupta and Yudhvir Singh; University Science Press

MAHARSHI DAYANAND UNIVERSITY, ROHTAK

SCHEME OF STUDIES & EXAMINATIONS

B.Tech. 4th YEAR COMPUTER SC & ENGINEERING, SEMESTER- VIII

(Scheme-F)

EFFECTIVE FROM THE SESSION 2012-13

		Subject	Internal Marks	External Marks	Total Marks
1.	**CSE- 402-F**	Industrial Training/Institutional Project Work	150	150	300

Note:

The students are required to undergo Industrial Training or Institutional Project Work of duration not less than 4 months in a reputed organization or concerned institute. The students who wish to undergo industrial training, the industry chosen for undergoing the training should be at least a private limited company. The students shall submit and present the mid-term progress report at the Institute. The presentation will be attended by a committee. Alternately, the teacher may visit the Industry to get the feedback of the students.

The final viva-voce of the Industrial Training or Institutional Project Work will be conducted by an external examiner and one internal examiner appointed by the Institute. External examiner will be from the panel of examiners submitted by the concerned institute approved by the Board of Studies in Engg. & Technology. Assessment of Industrial Training or Institutional Project Work will be based on seminar, viva-voce, report and certificate of Industrial Training or Institutional Project Work obtained by the student from the industry or Institute.

The internal marks distributions for the students who have undergone Industrial Training consist of 50 marks from the industry concern and 100 marks by the committee members consisting of faculty members of concerned department of

the parent institute.

The teachers engaged for Institutional Project work shall have a workload of 2 hours per group (at least 4

students) per week.

Course Outcomes:

At the end of this course the student shall be able to

CO1 have an understanding how to work in actual industry environment

CO2 utilise the technical resources

CO3 write technical/training reports

CO4 give oral presentation related to the work completed