

Academic Program Guide

Bachelor of Technology (Computer Science & Engineering) (B.Tech. CSE)



Session: 2019-20 Onwards

**Department of Computer Science & Engineering
BRCM
College of Engineering & Technology**

Vision and Mission of the Department

Vision

To be a Model in Quality Education for producing highly talented and globally recognizable students with sound ethics, latest knowledge, and innovative ideas in Computer Science & Engineering.

MISSION

To be a Model in Quality Education by

M1: Imparting good sound theoretical basis and wide-ranging practical experience to the Students for fulfilling the upcoming needs of the Society in the various fields of Computer Science & Engineering.

M2: Offering the Students an overall background suitable for making a Successful career in Industry/Research/Higher Education in India and abroad.

M3: Providing opportunity to the Students for Learning beyond Curriculum and improving Communication Skills.

M4: Engaging Students in Learning, Understanding and Applying Novel Ideas.

Program Specific Outcomes (PSO)

At the end of the program, the student

PSO1: Should be able to apply the Concepts of Mathematics, Algorithms, Data Structures, Programming Languages, Databases, Multimedia, Operating Systems, Computer Networks, Computer Architecture, Big Data Analysis, Artificial Intelligence and Machine Learning to solve computation tasks and develop applications of varying complexity.

PSO2: Should be able to understand and make a contribution in the areas of Computer Science & Engineering through the design & planning of Software based real-world applications and also demonstrate professional ethics & concern for social well-being.

Program Educational Objectives (PEO)

After 3-5 years our graduates will be:

PEO1: Have a successful carrier in Industry, Government, or other working environments as a Computer Engineer with an ability to solve a wide range of real life problems.

PEO2: Exhibit Good communication skills, Ethical conduct and sense of responsibility to serve the society and protect the environment.

PEO3: Be knowledgeable, inspired and a valued professional in the different working surroundings.

Program Outcomes (PO) as defined by NBA

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **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.
3. **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.
4. **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.
5. **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.
6. **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.
7. **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.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **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.
11. **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.
12. **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.

B.Tech (Computer Science and Engineering)
Common with B.Tech (Information Technology) &
B.Tech(Computer Science and Information Technology)
Scheme of Studies/Examination w.e.f. 2010-11

SEMESTER- 3

Sl .N o.	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-201 F	Data Structures Using C	3	1	-	4	50	100	-	150	3
2	CSE-203 F	Discrete Structures	3	1	-	4	50	100	-	150	3
3	MATH-201-FOR HUM-201-F	Mathematics III Common to OR ENGG. ECONOMICS	3	2	-	5	50	100	-	150	3
4	EE-217 -F	Digital & Analog Communication	3	1	-	4	50	100	-	150	3
5	EE-204-F	Digital Electronics	3	1	-	4	50	100	-	150	3
6	HUM-203 F	Fundamental of Management	3	1	-	4	50	100	-	150	3
7	IT-201-F	PC Lab	-	-	3	3	50	-	50	100	3
8	CSE-205-F	Data Structures Using C Lab	-	-	2	2	25	-	25	50	3
9	EE-224-F	Digital Electronics Lab	-	-	2	2	50	-	-	50	
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.

Data Structures Using 'C' (CSE-201 F)

Course code	CSE-201 F			
Category	Professional Core Course			
Course title	Data Structures Using 'C'			
Scheme	L	T	P	SEMESTER 3
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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,. Dequeues, priority queues, Applications of Queues.

UNIT-2

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.

UNIT-3

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 graphs

UNIT-4

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.

TEXT BOOKS:

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

REFERENCE BOOKS:

- 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. Seymour 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

Course Outcomes (CO) & CO-PO Mapping

Course: Data Structures Using 'C'

Course Code: CSE- 201 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Explain the basic concepts such as Abstract Data Types, Linear and Non-Linear Data structures.	L1 (Remember)
CO2	To Describe insertion, deletion and traversing operations on Data Structures.	L2(Understand)
CO3	To Solve problems using Algorithms such as the sorting, searching and hashing.	L3(Apply)
CO4	To Solve Problems using Data Structures such as Lists, Graphs, Queues.	L3 (Apply)
CO5	To Design programs using a variety of data structures such as stacks, queues, hash tables, binary trees, search trees, heaps, graphs, and B-trees.	L6 (Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											1	3	3
CO2	2	3										1	3	2
CO3	2	2	3									1	3	2
CO4	2		3									1	3	2
CO5	2	2	3	1								1	3	2

Discrete Structures (CSE-203 F)

Course code	CSE-203 F			
Category	Professional Core Course			
Course title	Discrete Structures			
Scheme	L	T	P	SEMESTER 3
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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(\wedge), OR(\vee), NOT(\sim), Truth value of a compound statement, propositions, tautologies, contradictions.

UNIT-2

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

UNIT-3

Algebraic 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

UNIT-4

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, Eulerian path and circuits, Hamilton paths and circuits, Planar graphs, Euler's formula, Trees, Spanning trees, Binary trees and its traversals

TEXT BOOKS:

- Elements of Discrete Mathematics, C.L Liu, 1985, McGraw Hill

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.

Course Outcomes (CO) & CO-PO Mapping

Course: Discrete Structure

Course Code: CSE- 203 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall the Concepts, design and implementation of Discrete mathematics	L1 (Remember)
CO2	To Perform the operations associated with sets, relations, functions and discrete structures.	L2(Understand)
CO3	To Apply mathematical logic to solve problems.	L3 (Apply)
CO4	To Apply the properties of Boolean algebra to simplify or convert a Boolean expression	L3(Apply)
CO5	To Solve real world problems using graphs and trees.	L4 (Analyze)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2									1	2	2
CO2	2	3	2									1	1	1
CO3	3	2										1	2	1
CO4	3	2										1	2	2
CO5	2	2	3									1	2	2

MATHEMATICS-III (MATH-201-F)

Course code	MATH-201-F			
Category	Basic Science Course			
Course title	MATHEMATICS-III			
Scheme	L	T	P	SEMESTER 3
	3	2	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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UNIT:1

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 cosine 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.

UNIT:2

Functions of Complex Variable : Definition, Exponential function, Trigonometric and Hyperbolic functions, Logarithmic functions. Limit and Continuity of a function, Differentiability 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 formula.

UNIT:3

Power series, radius and circle of convergence, Taylor's Maclaurin's and Laurent's series. Zeros 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.

UNIT:4

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.

TEXT BOOKS:

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

REFERENCE BOOKS:

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

Course Outcomes (CO) & CO-PO Mapping**Course: MATHEMATICS-III****Course Code: MATH-201-F**

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall The mathematical tools needed in evaluating multiple integrals and their usage.	L1(Remember)
CO2	To Understand the effective mathematical tools for the solutions of differential equations that model physical processes.	L2(Understand)
CO3	To Apply the tools of differentiation and integration of functions that are used in various techniques dealing engineering problems.	L3(Apply)
CO4	To Analyze how to deal with functions of several variables that are essential in most branches of engineering.	L4 (Analyze)
CO5	To Evaluate/solve the mathematical problems related to multivariable differentiation and integration.	L5(Evaluate)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	3	3
CO2	3	2										1	3	3
CO3	2	3										1	3	3
CO4	2	3										1	2	3
CO5	2	3										1	3	2

ENGINEERING ECONOMICS (HUM-201-F)

Course code	HUM-201-F			
Category	Humanities and Social Sciences including Management courses			
Course title	ENGINEERING ECONOMICS			
Scheme	L	T	P	SEMESTER 4
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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UNIT:1

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.

UNIT:2

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.

UNIT:3

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, Oligopoly, Monoplistic Competition (Main features of these markets)

UNIT:4

Supply and Law of Supply, Role of Demand & Supply in Price Determination 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.

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

Course Outcomes (CO) & CO-PO Mapping**Course: ENGINEERING ECONOMICS****Course Code: HUM-201-F**

CO (Course Outcomes)		RBT*- Revised Bloom’s Taxonomy
CO1	To Describe the Basics of Economic Theories terminology, Cost concepts and Pricing Policies Used in Engineering Economics.	L1(Remember)
CO2	To Summarize the measures of national income, the functions of banks and concepts of globalization.	L2(Understand)
CO3	To Discuss how supply and demand change when a product’s price changes.	L2(Understand)
CO4	To Use the Concept of Demand to explain the Outcomes of markets for individuals firms and society.	L4 (Analyze)
CO5	To Analyze how a change in price and income affects the behaviour of buyers and sellers.	L4(Analyze)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1						3					2	1	1	2
CO2						2			3		2	1	1	2
CO3						3					3	1	1	2
CO4						3					2	1	3	2
CO5						3			2		2	1	3	1

Digital and Analog Communication (EE-217 F)

Course code	EE-217 F			
Category	Professional Core Course			
Course title	Digital and Analog Communication			
Scheme	L	T	P	SEMESTER 3
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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UNIT-1

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.

UNIT-2

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

UNIT-3

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

UNIT-4

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.

TEXT BOOKS:

- 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

Course Outcomes (CO) & CO-PO Mapping**Course: Digital and Analog Communication****Course Code: EE-217 F**

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	Demonstrate generation and detection of analog and digital modulation techniques.	L1 (Remember)
CO2	Explain sampling, PCM, delta modulation, adaptive delta modulation and superheterodyne receiver.	L2 (Understand)
CO3	Compare the different analog and digital modulation techniques.	L4 (Analyze)
CO4	Distinguish various line coding schemes used for digital data transmission.	L4 (Analyze)
CO5	Apply time division multiplexing concepts in different pulse modulation techniques.	L6 (Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	1									1	2	2
CO2	3	3	1									1	3	2
CO3	3	3	1									1	3	2
CO4	3	3	1									1	2	2
CO5	3	3	1									1	2	2

DIGITAL ELECTRONICS (EE-204-F)

Course code	EE-204 F			
Category	Professional Core Course			
Course title	Digital Electronics			
Scheme	L	T	P	SEMESTER 3
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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UNIT-1

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)

UNIT-2

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

UNIT-3

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

UNIT-4

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

TEXT BOOKS:

- 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

Course Outcomes (CO) & CO-PO Mapping

Course: Digital Electronics
Course Code: EE-204 F.

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall the basics of Digital Electronics	L1 (Remember)
CO2	To Summarize the minimization techniques of Digital Circuits.	L2 (Understand)
CO3	To Apply the working mechanism and design guidelines of different combinational, and sequential circuits.	L3 (Apply)
CO4	To Analyze different types of Digital Electronic circuits using various Matrices and mathematical methods.	L4 (Analyze)
CO5	To Design different types of Digital Circuits.	L6 (Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	2
CO2	3	2										1	3	2
CO3	2	2	3									1	2	2
CO4	2	2	3									1	2	2
CO5	2	2	3									1	1	1

FUNDAMENTALS OF MANAGEMENT (HUM-203-F)

Course code	HUM-203-F			
Category	Humanities and Social Sciences including Management courses			
Course title	FUNDAMENTALS OF MANAGEMENT			
Scheme	L	T	P	SEMESTER 3
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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.

UNIT-2

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.

UNIT-3

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

UNIT-4

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.

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.

Course Outcomes (CO) & CO-PO Mapping

Course: Fundamentals of Management (Open Elective –I)
Course Code: HSMC-08G

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Describe the Basics of Management and the role of Management in an organization.	L2 (Understand)
CO2	To Explain the Importance of Staffing and Training.	L2 (Understand)
CO3	To Discuss the concept of Material management and Inventory Control.	L2 (Understand)
CO4	To Analyze the components of Marketing and Advertising.	L4 (Analyze)
CO5	To Assess the Various sources of Finance and Capital Structure.	L5 (Evaluate)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1											3	2	1	2
CO2									3	2	2	2	1	2
CO3											3	2	1	2
CO4											3	2	1	2
CO5											3	2	1	2

PC LAB (IT-201 F)

Course code	IT-201 F			
Category	Professional Core Course			
Course title	PC Lab			
Scheme	L	T	P	SEMESTER 3
	0	0	3	
Class work	50 Marks			
Exam	50 Marks			
Total	100 Marks			
Duration of Exam	03 Hours			

CONTENTS:

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. Prepare 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.

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.

Course Outcomes (CO) & CO-PO Mapping

Course: PC LAB

Course Code: IT-201 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Create different documentations in MS Word.	L6 (Create)
CO2	To Create different presentation in MS PowerPoint.	L6 (Create)
CO3	To Create different tables in MS Excel.	L6 (Create)
CO4	To Understand the working of different types of Computer hardware.	L4 (Analyze)
CO5	To be able to assemble a Personal Computer.	L4 (Analyze)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										2	3	3
CO2	3	2										2	3	3
CO3	3	2										2	3	3
CO4	3	2										2	2	2
CO5	3	2										2	1	1

Data Structures using 'C' Lab (CSE-205 F)

Course code	CSE- 205 F			
Category	Professional Core Course			
Course title	Data Structures using 'C' Lab			
Scheme	L	T	P	SEMESTER 3
	0	0	2	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

CONTENTS:

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 (CO) & CO-PO Mapping

Course: Data Structures LAB Using C

Course Code: CSE- 205 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Choose appropriate data structure while designing the applications..	L2(Understand)
CO2	To Solve the problems of various data structures such as stack, queue and tree.	L2(Understand)
CO3	To Analyze the complexity of the algorithms.	L4 (Analyze)
CO4	To Implement various searching and sorting techniques.	L6 (Create)
CO5	To Implement linear and non-linear data structures using linked list	L6 (Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											1	2	3
CO2	2	3			2							1	2	2
CO3	2	2	3		2							1	2	2
CO4	2		3		2							1	3	2
CO5	2	2	3	1	2							1	3	2

DIGITAL ELECTRONICS LAB (EE- 224 F)

Course code	EE- 224 F			
Category	Professional Core Course			
Course title	DIGITAL ELECTRONICS Lab			
Scheme	L	T	P	SEMESTER 3
	0	0	3	
Class work	50 Marks			
Exam	50 Marks			
Total	100 Marks			
Duration of Exam	03 Hours			

CONTENTS:

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 Vcc 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 (CO) & CO-PO Mapping

Course: Digital Electronics LAB

Course Code: EE- 224 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall the basic knowledge about measuring instrument and kit.	L1 (Remember)
CO2	To Explain the asynchronous, synchronous digital circuit and Flip-Flop conversion. Also basic knowledge about TTL and Flip- Flop Gates.	L2(Understand)
CO3	To Analyze the function using k-maps and operation of shift register	L4 (Analyze)
CO4	To Verify the operation of Multiplexer, Demultiplexer & counter.	L6 (Create)
CO5	To Design counter and seven segment display unit.	L6 (Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	1
CO2	2	3	2		2							1	3	2
CO3	2	2	3	2	2							1	2	1
CO4	2	2		2	2							1	2	2
CO5	2	2	3	2	2							1	1	1

B.Tech. (Computer Science and Engineering)
Common with B.Tech. (Information Technology) &
B.Tech. (Computer Science and Information Technology)
Scheme of Studies/Examination w.e.f. 2010-11

SEMESTER- 4

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	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 OR ENGG. ECONOMICS	3	2	-	5	50	100	-	150	3
4	IT-202-F	Object-Oriented Programming using C++	3	1	-	4	50	100	-	150	3
5	CSE-208 F	Internet Fundamentals	3	1	-	4	50	100	-	150	3
6	CSE-210 F	Computer Architecture and Organization	3	1	-	4	50	100	-	150	3
7	CSE-212 F	Data Base Management Systems Lab.	-	-	3	3	50	-	50	100	3
8	IT-206-F	C++ Programming Lab.	-	-	2	2	25	-	25	50	3
9	CSE-214 F	Internet Lab.	-	-	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.

Database Management Systems (CSE-202 F)

Course code	CSE-202 F			
Category	Professional Core Course			
Course title	Database Management Systems			
Scheme	L	T	P	SEMESTER 4
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

Storage Management, Programming languages:- 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, ER Diagram (Entity Relationship), mapping Constraints, Keys, Reduction of E-R diagram into tables.

UNIT-2

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.

UNIT-3

Introduction to Query Languages:- QLB, QBE, Structured query language – with special reference of (SQL of ORACLE), integrity constraints, functional dependencies & NORMALISATION – (up to 4th Normal forms), BCNF (Boyce – code normal forms)

UNIT: 4

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.

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, Addison-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

Course Outcomes (CO) & CO-PO Mapping**Course: Database Management Systems****Course Code: PEC-CSE-201G**

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Describe the concepts of DBMS Architecture and database objects and their Applications.	L2 (Understand)
CO2	To Summarize transaction processing, concurrency control and database recovery protocols in databases.	L2(Understand)
CO3	To Apply Relational algebra operation & Structured Query Language (SQL) for database manipulation.	L3(Apply)
CO4	To Apply normalization algorithms using database design theory for different applications.	L3(Apply)
CO5	To Design Relational database systems for different applications to interact with databases.	L6 (Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	1
CO2	2	3	2									1	3	2
CO3	2	2	3	2								1	2	1
CO4	2	2		2								1	2	2
CO5	1	2	3	2								1	1	1

Programming Languages (CSE-204 F)

Course code	CSE-204 F			
Category	Professional Core Course			
Course title	Programming Languages			
Scheme	L	T	P	SEMESTER 4
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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.

UNIT: 2

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.

UNIT: 3

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.

UNIT: 4

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, nonprocedural ,structured, functional and object oriented programming language, Comparison of C & C++ programming languages.

TEXT BOOKS:

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

REFERENCE BOOKS:

- 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

Course Outcomes (CO) & CO-PO Mapping

Course: Programming Language

Course Code: CSE-204 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Describe the basics of language translators compiler & interpreters.	L1(Remember)
CO2	To Discuss the Structured Data Objects and Data Types.	L2 (Understand)
CO3	To Analyze role of Sequence control and Data Control.	L4 (Analyze)
CO4	To Discuss the role of Storage Management.	L2 (Understand)
CO5	.To Compare structured, functional and object oriented programming language	L2 (Understand)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	2
CO2	3	3										1	2	2
CO3	3	2										1	2	2
CO4	3	2										1	2	2
CO5	3	2										1	2	2

MATHEMATICS-III (MATH-201-F)

Course code	MATH-201-F			
Category	Basic Science Course			
Course title	MATHEMATICS-III			
Scheme	L	T	P	SEMESTER 4
	3	2	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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 cosine 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.

UNIT-2

Functions of Complex Variable : Definition, Exponential function, Trigonometric and Hyperbolic functions, Logarithmic functions. Limit and Continuity of a function, Differentiability 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 formula.

UNIT-3

Power series, radius and circle of convergence, Taylor's Maclaurin's and Laurent's series. Zeros 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.

UNIT-4

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.

TEXT BOOKS:

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

REFERENCE BOOKS:

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

Course Outcomes (CO) & CO-PO Mapping

Course: MATHEMATICS-III

Course Code: MATH-201-F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall The mathematical tools needed in evaluating multiple integrals and their usage.	L1(Remember)
CO2	To Understand the effective mathematical tools for the solutions of differential equations that model physical processes.	L2(Understand)
CO3	To Apply the tools of differentiation and integration of functions that are used in various techniques dealing engineering problems.	L3(Apply)
CO4	To Analyze how to deal with functions of several variables that are essential in most branches of engineering.	L4(Analyze)
CO5	To Evaluate/solve the mathematical problems related to multivariable differentiation and integration.	L5(Evaluate)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	3	3
CO2	3	2										1	3	3
CO3	2	3										1	3	3
CO4	2	3										1	2	3
CO5	2	3										1	3	2

Object Oriented Programming Using C++ (IT-202 F)

Course code	IT-202 F			
Category	Professional Core Course			
Course title	Object Oriented Programming Using C++			
Scheme	L	T	P	SEMESTER 4
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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.

UNIT-2

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.

UNIT-3

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 BaseClass 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.

UNIT-4

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.

TEXT BOOKS:

- C++ How to Program by H M Deitel and P J Deitel, 1998, Prentice Hall
- 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.

Course Outcomes (CO) & CO-PO Mapping

Course: Object Oriented Programming Using C++

Course Code: IT-202 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall the basic concept of OOPs and C++ language features.	L1(Remember)
CO2	To Demonstrate the use of constructors, destructors and also the behaviour of inheritance and its implementation.	L2(Understand)
CO3	To Apply the concept of Function overloading, operator overloading, Inheritance, virtual functions and polymorphism.	L3(Apply)
CO4	To Analyze runtime Polymorphism and Generic Programming	L4(Analyze)
CO5	To Evaluate Exception handling	L5(Evaluate)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2									1	3	3
CO2	2	3	2									1	2	2
CO3	3	2	2									1	2	2
CO4	3	2	2									1	1	2
CO5	2	3	2									1	1	1

Computer Architecture & Organization (CSE- 210 F)

Course code	CSE-210 F			
Category	Professional Core Course			
Course title	Computer Architecture & Organization			
Scheme	L	T	P	SEMESTER 4
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

Boolean algebra and Logic gates, Combinational logic blocks(Adders, Multiplexers, Encoders, decoder), 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

UNIT-2

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.

UNIT-3

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).

UNIT-4

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.

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, 4 th edition, 1996, Prentice-Hall International edition.
- Computer System Architecture by M. Mano, 2001, Prentice-Hall.
- Computer Architecture- Nicholas Carter, 2002, T.M.H.

Course Outcomes (CO) & CO-PO Mapping

Course: Computer Organization & Architecture
 Course Code: PCC-CSE-204G

CO (Course Outcomes)		RBT*- Revised Bloom’s Taxonomy
CO1	To Describe the basics of Computer Organization and Architecture and functionality of central processing unit.	L1(Remember)
CO2	To Explain the basics of Data representation, components, and fixed point representation.	L2(Understand)
CO3	To Analyze different modes of data transfer, classify interconnection structures and distinguish CPU vs. ALU architectures & computations.	L4(Analyze)
CO4	To Classify cache memory Matrices techniques and examine register transfer between processor, memory & I/O.	L4(Analyze)
CO5	To Compare Hardwired & CISC style processors of parallel processing, pipelining and inter-processor communication.	L5(Evaluate)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2									1	2	2
CO2	2	3	2									1	3	2
CO3	2	2	3									1	2	2
CO4	2	2	3									1	2	1
CO5	1	2	3	1								1	1	1

Internet Fundamentals (CSE-208 F)

Course code	CSE-208 F			
Category	Professional Core Course			
Course title	Internet Fundamentals			
Scheme	L	T	P	SEMESTER 4
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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.

UNIT-2

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.

UNIT-3

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.

UNIT-4

Privacy and security topics: Introduction, Software Complexity, Encryption schemes, Secure Web document, Digital Signatures, Firewalls.

TEXT BOOKS:

- 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 Gkossbrenner-Internet 101 Computing MGH, 1996

Course Outcomes (CO) & CO-PO Mapping**Course: Internet Fundamentals****Course Code: (CSE-208 F)**

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall the basic concept of internet & Email.	L1(Remember)
CO2	To Understand World wide web basic concepts	L2(Understand)
CO3	To Implement basic command HTML and Java Script commands.	L3(Apply)
CO4	To Analyze encryptions schemes working.	L4(Analyze)
CO5	To Understand the concepts of Digital Signatures and Firewalls.	L2(Understand)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	2
CO2	2	3										1	3	2
CO3	2	3	2									1	2	2
CO4	2	3	2									1	3	2
CO5	2	2	3									1	3	3

Database Management Systems Lab (CSE- 212 F)

Course code	CSE-212 F			
Category	Professional Core Course			
Course title	Database Management Systems Lab			
Scheme	L	T	P	SEMESTER 4
	0	0	3	
Class work	50 Marks			
Exam	50 Marks			
Total	100 Marks			
Duration of Exam	03 Hours			

CONTENTS:

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
 - a) system
 - b) Engineering MCA
2. Inventory control system
 - a) Computer Lab
 - b) College Store
3. Student information system
 - a) Academic
 - b) Finance
4. Time table development system
 - a) CSE, IT & MCA Departments
 - b) 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 (CO) & CO-PO Mapping

Course: Database Management Systems LAB

Course Code: CSE-212 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To List of various of SQL Command	L2 (Understand)
CO2	To Demonstrate SQL queries using SQL operators.	L2 (Understand)
CO3	To Create a database by using data definition, data manipulation and control languages.	L6 (Create)
CO4	To Create a Database application and retrieve the values with the help of queries using SQL.	L6 (Create)
CO5	To Create views, cursor and triggers.	L6 (Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	1
CO2	2	3	2		2							1	3	2
CO3	2	2	3	2	2							1	2	1
CO4	2	2		2	2							1	2	2
CO5	2	2	3	2	2							1	1	1

C ++ Programming Lab. (IT-206 F)

Course code	IT-206 F			
Category	Professional Core Course			
Course title	C ++ Programming Lab			
Scheme	L	T	P	SEMESTER 4
	0	0	2	
Class work	50 Marks			
Exam	50 Marks			
Total	100 Marks			
Duration of Exam	03 Hours			

CONTENTS:

- 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.
- 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. Then 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
- 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
- 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

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 for the class 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 centimetres depending on the object on display.
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.

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<< endl;}
};
```

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.

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.
9. 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).

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.
11. 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 key should cause the program to print out the total cars and total cash and then exit.
12. 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)".
13. 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.
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 = $\frac{1}{2} * x * y$

Course Outcomes (CO) & CO-PO Mapping

Course: C ++ Programming Lab
Course Code: IT-206 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Explain C++ compiler and translate basic C programs into C++ programs.	L2 (Understand)
CO2	To Apply inheritance and polymorphism features to implement code reusability.	L3 (Apply)
CO3	To Analyze Exception handling concepts to handle runtime errors.	L4 (Analyze)
CO4	To Create programs on classes, objects, constructors and make use of access specified in classes.	L6 (Create)
CO5	To Create programs using different operators, function overloading and operator overloading.	L6 (Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2									1	3	1
CO2	2	3	2		2							1	1	1
CO3	3	2	2		2							1	2	2
CO4	3	2	2		2							1	3	3
CO5	2	3	2		2							1	3	3

Internets Lab (CSE 214 F)

Course code	CSE 214 F			
Category	Professional Core Course			
Course title	Internet Lab			
Scheme	L	T	P	SEMESTER 4
	0	0	3	
Class work	50 Marks			
Exam	50 Marks			
Total	100 Marks			
Duration of Exam	03 Hours			

CONTENTS:

1. Sending and receiving mails.
2. Chatting on the net.
3. Using FTP and Tel net server.
4. Using HTML Tags (table, form, image, anchor etc.).
5. Making a Web page of your college using HTML tags.

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

Course Outcomes (CO) & CO-PO Mapping

Course: Internets Lab
Course Code: CSE 214 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Use the basic concept of internet & Email.	L1(Remember)
CO2	To Understand working on different Web browsers.	L2(Understand)
CO3	To Implement basic command HTML create web pages.	L3(Apply)
CO4	To Implement basic command using Java Scripts.	L4(Analyze)
CO5	To Understand the difference between Internet, internet and Intranet.	L2(Understand)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	3
CO2	2	3			2							1	3	2
CO3	2	3	2		2							1	3	3
CO4	2	3	2		2							1	3	3
CO5	2	2	3		2							1	3	3

B.Tech. (Computer Science and Engineering)
Common with B.Tech. (Information Technology) &
B.Tech. (Computer Science and Information Technology)
Scheme of Studies/Examination w.e.f. 2010-11

SEMESTER- 5

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	CSE-301 F	Principles of Operating System (CSE,IT)	3	1	-	4	50	100	-	150	3
2	EE-309-F	Microprocessors and Interfacing (EL,CSE,IT,EI, IC, EEE, AEI)	3	1	-	4	50	100	-	150	3
3	CSE-303-F	Computer Graphics (CSE,IT)	3	1	-	4	50	100	-	150	3
4	CSE-305-F	Theory of Automata Computation	3	1	-	4	50	100	-	150	3
5	CSE-307-F	Web Development (Common with IT – VI Sem)	3	1	-	4	50	100	-	150	3
6	IT-204-F	Multimedia Technologies (Common with IT- IVSem)	3	-	-	3	50	100	-	150	3
7	CSE-309-F	Computer Graphics Lab. (CSE,IT)	-	-	3	3	25	-	25	50	3
8	CSE-311-F	Web Development & Core JAVA Lab. th (Common with 6 Sem.- IT)	-	-	2	2	25	-	25	50	3
9	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	3
12	CSE-315-F	Practical Training-I	-	-	2	2	-	-	-	-	-
		Total	18	5	13	36	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.
2. 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.

Principles of Operating Systems (CSE-301F)

Course code	CSE-301F			
Category	Professional Core Course			
Course title	Principles of Operating Systems			
Scheme	L	T	P	SEMESTER 5
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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), MultilevelQueue Scheduling.

UNIT-2

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.

UNIT-3

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.

UNIT-4

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

Unix System And Windows NT Overview: Unix system call for processes and file system management, Shell interpreter, Windows NT architecture overview, Windows NT filesystem.

TEXT BOOKS:

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

Course Outcomes (CO) & CO-PO Mapping

Course: Principles of Operating Systems

Course Code: CSE-301F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall the basic knowledge about the Operating System and Process.	L1 (Remember)
CO2	To Describe the concepts of memory management including virtual memory.	L2 (Understand)
CO3	To Apply the concept of the different scheduling algorithms used for process management in operating system.	L3 (Apply)
CO4	To Analyze the issues related to file system interface and implementation, disk management.	L4 (Analyze)
CO5	To Compare various types of operating systems including Unix.	L5 (Evaluate)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	1	1
CO2	2	3										1	1	2
CO3	2	3										1	1	2
CO4	2	3										1	2	2
CO5	1	3										1	1	1

MICROPROCESSOR AND INTERFACING (EE-309-F)

Course code	EE-309-F			
Category	Professional Core Course			
Course title	MICROPROCESSOR AND INTERFACING			
Scheme	L	T	P	SEMESTER 5
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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

UNIT-2

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

UNIT-3

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

UNIT-4

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.

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

Course Outcomes (CO) & CO-PO Mapping

Course: MICROPROCESSOR AND INTERFACING
 Course Code: EE-309-F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy's
CO1	To Recall the basic knowledge of microprocessor and interfacing devices.	L1(Remember)
CO2	To Understand the construction, principle of operation and pin configuration and architecture of microprocessor (8085,8086 processor) and peripheral devices.	L2(Understand)
CO3	To Experiment the programming by the understanding of instruction sets of microprocessor.	L3(Apply)
CO4	To Analyze the interfacing of devices like 8255,8259,8237,8254.	L4(Analyze)
CO5	To Create the programming of 8085 and 8086 microprocessor and interfacing the devices	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	1	2
CO2	2	3										1	1	2
CO3	2	2	3									1	1	2
CO4	2	2	3									1	1	2
CO5	2	2	3									1	1	1

Computer Graphics (CSE- 303F)

Course code	CSE- 303F			
Category	Professional Core Course			
Course title	Computer Graphics			
Scheme	L	T	P	SEMESTER 5
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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.

UNIT-2

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

UNIT-3

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

UNIT-4

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.

TEXT BOOKS:

- Computer Graphics Principles and Practices second edition by James D. Foley, Andeies van Dam, Stevan K. Feiner and Johb F. Hughes, 2000, Addison Wesley.
- 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, Addison Wesley.
- Computer Graphics: Secrets and Solutions by Corrign John, BPB
- Graphics, GUI, Games & Multimedia Projects in C by Pilaian & Mahendra, Standard Publ.
- Computer Graphics Secrets and solutions by Corrign John, 1994, BPV
- Introduction to Computer Graphics By N. Krishanmurthy T.M.H 2002

Course: Computer Graphics

Course Code: CSE-303-F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Describe the fundamental algorithms used in computer graphics and to some extent be able to compare and evaluate them.	L2(Understand)
CO2	To Summarize different hidden surface elimination algorithms and shading techniques used in computer graphics and digital media production.	L2(Understand)
CO3	To Explain about the technology necessary for creating multimedia content for the web, video, DVD, 2D and 3D graphics, Sound and programming.	L2(Understand)
CO4	To Extract scene with different clipping methods and its transformation to graphics display device.	L4(Analyze)
CO5	To Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2		2									1	2	1
CO2	2	2										1	2	1
CO3	2		1									1	2	1
CO4		3		2								1	2	1
CO5												1	1	1

Theory of Automata Computation (CSE-305 F)

Course code	CSE- 305F			
Category	Professional Core Course			
Course title	Theory of Automata Computation			
Scheme	L	T	P	SEMESTER 5
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

Finite Automata and Regular Expressions: Finite State Systems, Basic Definitions Non-Deterministic finite automata (NFA), Deterministic finite automata (DFA), Equivalence of DFA and NFA Conversion of NFA to DFA Finite automata with Emoves, 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.

UNIT-2

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)

UNIT-3

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

UNIT-4

Chomsky Hierarchies: Chomsky hierarchies of grammars, Unrestricted grammars, Context sensitive languages, Relation between languages of classes.
Computability: Basic concepts, Primitive Recursive Functions.

TEXT BOOKS:

- Introduction to automata theory, language & computations- Hopcroft & 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

Course Outcomes (CO) & CO-PO Mapping**Course: Theory of Automata Computation****Course Code: CSE- 305F**

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy's
CO1	To Understand designing of various kinds of Finite State Machines.	L2(Understand)
CO2	To Analyze various types of grammars i.e. Context Free Grammars.	L4(Analyze)
CO3	To Describe the basic concepts of computability using Turing Machines and Undecidability.	L2(Understand)
CO4	To Examine the Regular Expressions and Properties of Regular languages.	L4(Analyze)
CO5	To Conceptualize about parsing of grammars, finding out ambiguities and removing ambiguities from grammars.	L5(Evaluate)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2									1	1	1
CO2	2	3	2									1	1	2
CO3	2	2	3	2								1	1	1
CO4	2	3										1	2	2
CO5	2	2		2								1	3	2

Web Development (CSE- 307F)

Course code	CSE- 307F			
Category	Professional Core Course			
Course title	Web Development			
Scheme	L	T	P	SEMESTER 5
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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

UNIT-2

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.

UNIT-3

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)

UNIT-4

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 .

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

- 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

Course Outcomes (CO) & CO-PO Mapping

Course: Web Technologies
Course Code: CSE- 307F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall the basic concept of internet & protocols of internet.	L1(Remember)
CO2	To Understand HTML,CSS,XML & PHP for website preparation.	L2(Understand)
CO3	To Implement AJAX with PHP for database connectivity.	L3(Apply)
CO4	To Analyze different tools & Web development languages for Attractive Website.	L4(Analyze)
CO5	To Design web pages using HTML, XML and DHTML.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	2
CO2	2	3										1	3	2
CO3	2	3	2									1	2	2
CO4	2	3	2									1	3	2
CO5	2	2	3									1	3	3

Multimedia Technologies (IT-204F)

Course code	IT-204F			
Category	Professional Core Course			
Course title	Multimedia Technologies			
Scheme	L	T	P	SEMESTER 5
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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.

UNIT-2

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.

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 & quadrasonic 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

UNIT-4

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.

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

Course: Multimedia Technologies

Course Code: IT-204-F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Understand of technical aspect of Multimedia Systems.	L2(Understand)
CO2	To Understand various file formats for audio, video and text media	L2(Understand)
CO3	To Develop various Multimedia Systems applicable in real time.	L6(Create)
CO4	To Design interactive multimedia software.	L4(Analyze)
CO5	To Evaluate multimedia application for its optimum performance.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2		2									1	2	2
CO2	2	2	2									1	3	2
CO3	2	2	1									1	2	2
CO4	2	3	2									1	2	2
CO5	2	1	3									1	3	2

Computer Graphics Lab (CSE-309F)

Course code	CSE 309 F			
Category	Professional Core Course			
Course title	Computer Graphics Lab			
Scheme	L	T	P	SEMESTER 5
	0	0	2	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

CONTENTS:

List of programs to be developed

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. of
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.

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

Course: Computer Graphics Lab

Course Code: CSE-309-F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Understand the basic concepts of computer graphics.	L2(Understand)
CO2	To Apply clipping and filling techniques for modifying an object.	L3(Apply)
CO3	To Understand the concepts of different type of geometric transformation of objects in 2D and 3D.	L2(Understand)
CO4	To Understand the practical implementation of modeling, rendering, viewing of objects in 2D.	L2(Understand)
CO5	To Design scan conversion problems using C++ Programming.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2		2									1	2	1
CO2	2	2	2									1	2	1
CO3	1		1									1	1	1
CO4		3	2	2								1	2	1
CO5			2	2								1	1	1

Web Development and Core Java Lab (CSE-311F)

Course code	CSE 311 F			
Category	Professional Core Course			
Course title	Web Development and Core Java Lab			
Scheme	L	T	P	SEMESTER 5
	0	0	2	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

CONTENTS:

1. Java programs using classes & objects and various control constructs such as loops etc , and data structures such as arrays , structures and functions.
2. Java programs for creating Applets for display of Images ,Texts and Animation
3. Programs related to interfaces & packages
4. Input output & Random files programs in java Java
5. programs using Event driven concept Programs related to
6. Network Programming
7. Development of Web site for the college or newspaper agency.

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

**Course: Web Development & Core
JAVA Lab**

Course Code: CSE-311-F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Analyze a web page and identify its elements and attributes.	L4(Analyze)
CO2	To Create web pages using XHTML and Cascading Style Sheets.	L6(Create)
CO3	To Build dynamic web pages using JavaScript.	L6(Create)
CO4	To Create XML documents and Schemas.	L6(Create)
CO5	To Develop a Program using XML.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2		3									1	2	2
CO2	2	2	3									1	3	2
CO3	1		2		2							1	2	2
CO4	1	3	2	2	2							1	2	2
CO5	2		3		2							1	3	2

Multimedia Technologies Lab (IT-208 F)

Course code	IT-208 F			
Category	Professional Core Course			
Course title	Multimedia Technologies Lab			
Scheme	L	T	P	SEMESTER 5
	0	0	2	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

CONTENTS:

1. Write a program to justify a text entered by the user on both the left and right hand side. For example, the text " 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 Entire building but be interested in only ground floor.
2. Study the notes of a piano and stimulate them using the key board and store them in a file.

3. Write a program to read a paragraph and store it to a file name suggested by the author.
4. Devise a routine to produce the animation effect of a square transforming to a triangle and then to a circle.
5. Write a program to show a bitmap image on your computer screen.
6. 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.
7. 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.
8. Write a program to simulate the game of pool table.
9. Write a program to simulate the game Mine Sweeper.
10. Write a program to play “wave” or “midi” format sound files.

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

Course: Multimedia Technologies Lab

Course Code: IT-208-F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Learn how to implement multimedia e-learning in Macromedia Flash.	L2(Understand)
CO2	To Practice layering concept in multimedia environment.	L2(Understand)
CO3	To Create multi-user multimedia applications.	L6(Create)
CO4	To Analyze a design's ability to interact with other apps on the device	L4(Analyze)
CO5	To Create animations for advance assignments of real world.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2		2		2							1	3	2
CO2	2	2	2		1							1	3	2
CO3	2	2	1		2							1	2	2
CO4	2	3	2		1							1	2	2
CO5	2	1	3		2							1	3	2

Microprocessors and Interfacing Lab (EE-329-F)

Course code	EE-329-F			
Category	Professional Core Course			
Course title	Microprocessors and Interfacing Lab			
Scheme	L	T	P	SEMESTER 5
	0	0	2	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

CONTENTS:

List Of Experiments:

1. Study of 8085 Microprocessor kit.
2. Write a program using 8085 and verify for :
 - a. Addition of two 8-bit numbers.
 - b. Addition of two 8-bit numbers (with carry).
3. Write a program using 8085 and verify for :
 - a. 8-bit subtraction (display borrow)
 - b. 16-bit subtraction (display borrow) Duration of
4. 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.
5. Write a program using 8085 for multiplication of two 8- bit numbers by bit rotation method and verify.
6. Write a program using 8085 for division of two 8- bit numbers by repeated subtraction method and test for typical data.
7. Write a program using 8085 for dividing two 8- bit numbers by bit rotation method and test for typical data.
8. Study of 8086 microprocessor kit
9. Write a program using 8086 for division of a defined double word (stored in a data segment)

- by another double Word division and verify.
10. Write a program using 8086 for finding the square root of a given number and verify.
 11. Write a program using 8086 for copying 12 bytes of data from source to destination and verify.
 12. Write a program using 8086 and verify for:
 - a. Finding the largest number from an array.
 - b. Finding the smallest number from an array.
 13. Write a program using 8086 for arranging an array of numbers in descending order and verify.
 14. Write a program using 8086 for arranging an array of numbers in ascending order and verify.
 15. 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.

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

Course Outcomes (CO) & CO-PO Mapping

Course: Microprocessors and Interfacing Lab
Course Code: EE-329-F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Understand and apply the fundamentals of assembly level programming of microprocessors and microcontroller.	L3 (Apply)
CO2	To Solve basic binary math operations using the instructions of microprocessor 8085.	L3(Apply)
CO3	To Design , code and debugs Assembly Language programs to implement simple programs.	L6(Create)
CO4	To Apply programming knowledge using the capabilities of the stack, the program counter.	L3 (Apply)
CO5	To Troubleshoot interactions between software and hardware.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	1	2
CO2	2	3			2							1	1	2
CO3	2	2	3		2							1	1	2
CO4	2	2	3		2							1	1	2
CO5	2	2	3		2							1	1	1

Operating Systems Lab (CSE-313F)

Course code	CSE-313F			
Category	Professional Core Course			
Course title	Operating Systems Lab			
Scheme	L	T	P	SEMESTER 5
	0	0	2	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

CONTENTS:

- 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)
- Administration of LINUX Operating System.
- Writing of Shell Scripts (Shell programming).
- AWK programming.

Course Outcomes (CO) & CO-PO Mapping

Course: Operating System LAB

Course Code: CSE-313F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Discuss UNIX File System & Commands for working in UNIX environment.	L2 (Understand)
CO2	To Apply the basic concepts of Shell Programming and control structures	L3 (Apply)
CO3	To Analyze LINUX kernel, shell, basic commands, pipe and filter commands.	L4 (Analyze)
CO4	To Analyze CPU Scheduling Algorithms. (FCFS, RR, SJF, Priority, Multilevel Queuing)	L4 (Analyze)
CO5	To Evaluate simulating FIFO, LRU, and OPTIMAL page replacement algorithm.	L5 (Evaluate)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	1	1
CO2	2	3			2							1	1	2
CO3	2	3		2	2							1	1	2
CO4	2	3		2	2							1	2	2
CO5	1	3			2							1	1	1

B.Tech. (Computer Science and Engineering)
Common with B.Tech. (Information Technology) &
B.Tech. (Computer Science and Information Technology)
Scheme of Studies/Examination w.e.f. 2010-11

SEMESTER- 6

Sr. No.	CourseCode	Course Title	Hours per week			Total Contact Hrs. per week	Examination Schedule(Marks)				Duration of Exam (Hours)
			L	T	P		Mark of Class work	Theory	Practical	Total	
1	CSE-302-F	Principles of Software Engineering	3	0	0	3	25	75		100	3
2	CSE-304-F	Intelligent System	3	0	0	3	25	75		100	3
3	IT-305-F	Computer Networks	3	0	0	3	25	75		100	3
4	IT-303-F	Systems Programmig & System Administration	3	0	0	3	25	75		100	3
5	CSE-306-F	Analysis & Design of Algorithm	2	0	0	2	25	75		100	3
6	EE-310-F	Digital System Design	3	0	0	3	25	75		100	3
7	CSE-308-F	Intelligent System Lab	0	0	3	3	25		25	50	3
8	EE-330-F	Digital System Design Lab	0	0	3	3	25		25	50	3
9	CSE-310-F	Computer Network Lab	0	0	3	3	25		25	50	3
10	CSE-312 G	Visual Programming Lab									
11	GP-302 G	General Proficiency	0	0	3	3	25		25	50	3
Total										800	

Principles of Software Engineering (CSE-302-F)

Course code	CSE-302F			
Category	Professional Core Course			
Course title	Principles of Software Engineering			
Scheme	L	T	P	SEMESTER 6
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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.

UNIT: 2

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.

UNIT: 3

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; Transformflow, 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,; Validationtesting, 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.

UNIT: 4

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.

Book:

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

Reference Books:

- Fundamentals of software Engineering, Rajib Mall, PHI
- Software Engineering by Nasib Singh Gill, Khanna Book Publishing Co (p) Ltd
- 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

Course Outcomes (CO) & CO-PO Mapping

Course: Principles of Software Engineering (Elective-I)

Course Code: CSE-302F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Understand the Basics Terms of Software Engineering.	L2(Understand)
CO2	To Discuss Various Software Testing Techniques, Software Quality Assurance activities, ISO standards and Software configuration management.	L2 (Understand)
CO3	To Apply the software engineering lifecycle by demonstrating competence in requirement analysis, planning, analysis, design, construction, testing and deployment.	L3 (Apply)
CO4	To Analyze and lay down software requirements through a productive association with various stakeholders of the software project.	L4(Analyze)
CO5	To Analyze and plan software solutions to problems using an object-oriented strategy.	L4 (Analyze)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	3	2
CO2	2	3	2									1	2	3
CO3	2	2	3	2								1	3	2
CO4	2	2	3	2								1	2	2
CO5	2	2	2									1	2	3

Intelligent Systems (CSE- 304 F)

Course code	CSE-304F			
Category	Professional Core Course			
Course title	Intelligent Systems			
Scheme	L	T	P	SEMESTER 6
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 6 parts of 2.5 marks each from all units and remaining eight questions of 15 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

UNIT1:

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.

UNIT2:

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, Bayes' probabilistic inferences and Dempster shafer theory, Heuristic methods

UNIT3:

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

UNIT4:

Learning from examples, discovery as learning, Learning 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.

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, Stuart Russel and peter norvig, 1998, PHI. rd
- Artificial intelligence, Patrick Henry Winston:, 1992, Addison Wesley 3 Ed.,

Course Outcomes (CO) & CO-PO Mapping

Course: Intelligent Systems

Course Code: CSE-304F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Describe the deep understanding of the basic artificial intelligence techniques.	L2(Understand)
CO2	To Demonstrate good knowledge of basic theoretical foundations of the following common intelligent systems methodologies.	L2(Understand)
CO3	To Determine which type of intelligent system methodology would be suitable for a given type of application problem.	L3(Apply)
CO4	To Analyze the value of intelligent systems for sustainable processes, services, or systems .	L4(Analyze)
CO5	To Design and develop an intelligent system for a selected application.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	1
CO2	2	3	2									1	3	2
CO3	2	2	3	2								1	2	1
CO4	2	2		2								1	2	2
CO5	1	2	3	2								1	1	1

Computer Network (IT-305 F)

Course code	IT- 305 F			
Category	Professional Core Course			
Course title	Computer Network			
Scheme	L	T	P	SEMESTER 6
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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.

UNIT-2

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.

UNIT-3

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),

UNIT-4

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.

TEXT BOOKS:

- 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,.
- Computer Networks – A System Approach, Larry L. Peterson & Bruce S. Davie, 2 Edition
- Computer Networking – ED Tittel , 2002, T.M.H

Course Outcomes (CO) & CO-PO Mapping

Course: Computer Networks

Course Code: IT- 305 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy's
CO1	To Explain Basic Computer Network Terms and Principles.	L1 (Remember)
CO2	To Summarize different protocols used at Application Layer i.e .FTP, DNS, HTTP, DNS, SNMP, SMTP.	L2 (Understand)
CO3	To Examine the functions of different layers in OSI and TCP/IP model.	L4 (Analyze)
CO4	To Analyze the different types of Network Topologies and Protocols.	L4 (Analyze)
CO5	To Compare different Network Layer Protocols and Routing Algorithms.	L4 (Analyze)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											1	2	3
CO2	2	3	2									1	1	2
CO3	3	2	2									1	2	2
CO4	2	2		3								1	3	3
CO5	2	3	2									1	3	1

System Programming and System Administration (IT- 303 F)

Course code	IT- 303 F			
Category	Professional Core Course			
Course title	System Programming and System Administration			
Scheme	L	T	P	SEMESTER 6
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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

UNIT-2

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.

UNIT-3

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.

UNIT-4

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

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 BOOKS:

- Advanced Unix programmer's Guide by Stephen Prato, BPB
- Unix- Concept and applications by Sumitabha Das, 2002, T.M..H

Course Outcomes (CO) & CO-PO Mapping

Course: Systems Programming & System Administration

Course Code: IT-303 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Organize the functionalities & components of system software & tools into different layers for efficient code generation.	L2(Understand)
CO2	Ability to identify, formulate, and solve computer engineering problems with proper systematic & semantic approach	L2(Understand)
CO3	To Apply the knowledge & technique to develop solutions to real world problems by compiling application programs	L3(Apply)
CO4	To Develop possible program constructs for further code generation with Type checking & memory management strategy	L4(Analyze)
CO5	To Design a simple compiler with tools & different with optimized techniques.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2											1	2	1
CO2	2		3									1	3	2
CO3	2											1	2	1
CO4		3	2									1	2	2
CO5					3							1	1	1

Analysis and Design of Algorithm (CSE- 306 F)

Course code	CSE-306F			
Category	Professional Core Course			
Course title	Analysis and Design of Algorithm			
Scheme	L	T	P	SEMESTER 6
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 6 parts of 2.5 marks each from all units and remaining eight questions of 15 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

UNIT-1

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, quick sort, selection sort, Strassen's matrix multiplication algorithms and analysis of algorithms for these problems.

UNIT-2

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

Dynamic Programming: General method, optimal binary search trees, 0/1 knapsack, the traveling salesperson problem.

UNIT-3

Back Tracking: General method, 8 queen's problem, graph colouring, Hamiltonian cycles, analysis of these problems.

Branch and Bound: Method, 0/1 knapsack and traveling salesperson problem, efficiency considerations. Techniques for algebraic problems, some lower bounds on parallel computations.

UNIT-4

NP Hard and NP Complete Problems: Basic concepts, Cook's theorem, NP hard graph and

NP scheduling problems some simplified NP hard problems

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. & Hedetniemi, 1997, MGH
- Introduction to Computers Science- An algorithms approach , Jean Paul.

Course Outcomes (CO) & CO-PO Mapping

Course: Analysis and Design of Algorithm

Course Code: CSE-306F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall the concept of algorithm designs a non-linear data structures.	L1(Remember)
CO2	To Describe NP Hard and NP Complete Problems.	L2(Understand)
CO3	To Apply Divide and Conquer, Greedy and Dynamic Programming algorithmic methods.	L3(Apply)
CO4	To Apply efficient algorithms based on Backtracking and Branch & Bound approach in solving real time problems.	L3 (Apply)
CO5	To Analyze the asymptotic performance of algorithms.	L4(Analyze)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2									1	3	3
CO2	2	3	2	2								1	2	2
CO3	2	2	3	2								1	2	2
CO4	2	2	3	2								1	2	2
CO5	2	2		3								1	3	2

Digital System Design (EE- 310 F)

Course code	EE- 310 F			
Category	Professional Core Course			
Course title	Digital System Design			
Scheme	L	T	P	SEMESTER 6
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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.

UNIT-2

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

UNIT-3

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.

UNIT-4

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: Programmable logic devices : ROM, PLAs, PALs, GAL, PEEL, CPLDs and FPGA. Design implementation using CPLDs and FPGAs

REFERENCE BOOKS:

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

Course Outcomes (CO) & CO-PO Mapping

Course: Digital System Design
Course Code: EE-310F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Understand the fundamental concepts and techniques used in digital electronics.	L2(Understand)
CO2	To Explain the working mechanism and design guidelines of different combinational and sequential circuits.	L2(Understand)
CO3	To Analyze the numerical information in different forms and Boolean Algebra theorems.	L4 (Analyze)
CO4	To Design and analyze combinational and sequential circuits.	L6(Create)
CO5	To Implement logic families and realization of logic gates.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	1
CO2	3	2										1	1	2
CO3	2	2	3									1	2	1
CO4	2	2	3									1	2	2
CO5	2	2	3									1	1	1

Intelligent System Lab (CSE- 308 F)

Course code	CSE- 308 F			
Category	Professional Core Course			
Course title	Intelligent System Lab			
Scheme	L	T	P	SEMESTER 6
	0	0	2	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

CONTENTS:

1. Study of PROLOG. Write the following programs using PROLOG.
2. Write a program to solve 8 queens problem.
3. Solve any problem using depth first search.
4. Solve any problem using best first search.
5. Solve 8-puzzle problem using best first search
6. Solve Robot (traversal) problem using means End Analysis.
7. Solve traveling salesman problem.

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

Course Outcomes (CO) & CO-PO Mapping

Course: Intelligent Systems Lab
Course Code: CSE-308F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Explore the features of PROLOG programming language, including basic syntax, selection and search strategies of PROLOG	L2(Understand)
CO2	To Understand syntax, semantics and natural deduction proof system of propositional and predicate logic	L2(Understand)
CO3	To Implement the recursion and sequences using prolog programming..	L3(Apply)
CO4	To Demonstrate the PROLOG programming language skills in implementing various real life problems.	L3(Analyze)
CO5	To Demonstrate LISP programming language skills by solving real life problems through AI prospect.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	1
CO2	2	3	2		2							1	3	2
CO3	2	2	3	2	2							1	2	1
CO4	2	2		2	2							1	2	2
CO5	2	2	3	2	2							1	1	1

DIGITAL SYSTEM DESIGN Lab (EE- 330 F)

Course code	EE- 330 F			
Category	Professional Core Course			
Course title	DIGITAL SYSTEM DESIGN Lab			
Scheme	L	T	P	SEMESTER 6
	0	0	2	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

CONTENTS:

List Of Experiments:

1. Design all gates using VHDL.
2. Write VHDL programs for the following circuits, check the wave forms and the hardware generated
 - a. half adder
 - b. full adder
3. Write VHDL programs for the following circuits, check the wave forms and the hardware generated
 - a. multiplexer
 - b. demultiplexer
4. Write VHDL programs for the following circuits, check the wave forms and the hardware generated
 - a. decoder
 - b. encoder
5. 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

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

Course Outcomes (CO) & CO-PO Mapping

Course: Digital System Design Lab
Course Code: EE-330F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Explain VLSI Design Flow, design automation tools and algorithms.	L2(Understand)
CO2	To Understand the layout design techniques for analog circuits.	L2(Understand)
CO3	To Design Digital circuits using VHDL and Implement these designs with FPGA development boards.	L4 (Analyze)
CO4	To Design analog and digital systems at circuit level using EDA tools.	L6(Create)
CO5	To Apply efficient techniques at circuit level for improving power and speed of the systems using EDA tool.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2										1	2	1
CO2	2	3	2									1	2	2
CO3	2	2	2									1	2	1
CO4	2	2										1	2	2
CO5	2	2	3									1	1	1

Computer Network Lab (CSE- 310 F)

Course code	CSE- 310 F			
Category	Professional Core Course			
Course title	Computer Network Lab			
Scheme	L	T	P	SEMESTER 6
	0	0	3	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

CONTENTS:

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 (CO) & CO-PO Mapping

Course: Computer Networks Lab
Course Code: CSE- 310 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy's
CO1	To Demonstrate the function(s) of each layers of the OSI model and TCP/IP.	L3(Apply)
CO2	To Describe the different types of network topologies and protocols.	L2(Understand)
CO3	To Analyze the various routing algorithms.	L4(Analyze)
CO4	To Construct simple network by using any modern Open Source Network Simulation Tool.	L6(Create)
CO5	To Design and implement a peer to peer file sharing application utilizing application layer protocols such as HTTP, DNS, and SMTP and transportation layer protocol.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											1	2	3
CO2	2	3	2		2							1	1	2
CO3	3	2	2		2							1	2	2
CO4	2	2		3	2							1	3	3
CO5	2	3	2		2							1	3	1

Visual Programming Lab (CSE- 312 F)

Course code	CSE- 312 F			
Category	Professional Core Course			
Course title	Visual Programming Lab			
Scheme	L	T	P	SEMESTER 6
	0	0	3	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

CONTENTS:

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

- i. Study Windows API"s. Find out their relationship with MFC classes. Appreciate how they are helpful in finding complexities of windows programming.
- ii. Get familiar with essential classes in a typical (Document- view architecture) VC++ Program and their relationship with each other.
- iii. 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.
- iv. Create an SDI application in VC++ using which the user can draw at most 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"
- v. Create an application in VC++ that shows how menu items can be grayed, disabled and appended at run time.
- vi. Write a program in VC++ to implement serialization of inbuilt and user

- defined objects.
- vii. Write a program in VC++ to create archive class object from CFile class that reads and stores a simple structure (record).
 - viii. Make an Active X control in VC++ derived from a standard control.
 - ix. Write a program in VB to implement a simple calculator.
 - x. Create a simple database in MS Access Database /Oracle and a simple database application in VB that shows database connectivity through DAO and ADO.
 - xi. Write a simple program that displays an appropriate message when the illegal operation is performed using error handling technique in VB.
 - xii. Write a program in VB to create a notepad.
 - xiii. Create a DLL in VB.

2) Bright students may do the following exercises:

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

Course Outcomes (CO) & CO-PO Mapping

Course: Visual Programming Lab
Course Code: CSE-312F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Integrate variables and constants into calculations applying VB.NET	L4 (Analyze)
CO2	To Determine logical alternatives with VB.NET decision structures	L4 (Analyze)
CO3	To Implement lists and loops with VB.NET controls and iteration	L6(Create)
CO4	To Create VB.NET programs using multiple array techniques	L6(Create)
CO5	To Design, formulate, and construct applications with VB.NET.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2										1	2	1
CO2	2	2	2									1	2	2
CO3	2	2	2									1	3	3
CO4	2	2	2									1	3	2
CO5	2	2	3									1	2	3

**B.Tech. (Computer Science and Engineering)
Common with B.Tech. (Information Technology) &
B.Tech. (Computer Science and Information Technology)
Scheme of Studies/Examination w.e.f. 2012-12
SEMESTER- 7**

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:

1. Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.
2. 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.
3. 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.

ADVANCED COMPUTER ARCHITECTURE

Course code	CSE-401 F			
Category	Professional Core Course			
Course title	ADVANCED COMPUTER ARCHITECTURE			
Scheme	L	T	P	SEMESTER 7
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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

UNIT-2

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 T cycle in V-R Translation, studies. Design summary.

UNIT-3

Memory System Design: The physical memory, models of simple processor memory interaction, processor memory 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.

UNIT-4

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 Memory multiprocessors, Memory Coherence in shared Memory Multiprocessors

Text Book:

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

Reference Books:

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

Course Outcomes (CO) & CO-PO Mapping

Course: Advanced Computer Architecture
Course Code: CSE-401 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Discuss the computational model and micro architectural design of Advance Computer Architecture.	L2(Understand)
CO2	To Describe various parallel processing techniques, performance measures and code scheduling.	L2(Understand)
CO3	To Interpret the role of VLIW Superscalar processor and branch handling techniques for performance improvement.	L3(Apply)
CO4	To Analyze various MIMD architecture, various static and dynamic networks for realizing the efficient network.	L4(Analyze)
CO5	To Distinguish advance processor technology, memory hierarchy and cache tolerance using directory based and snoopy class of protocols.	L4(Analyze)

CO - PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	1	2
CO2	3	2	2									1	1	3
CO3	3	2	2									1	1	2
CO4	2	3	2									1	1	3
CO5	3	2	2	2								1	1	1

SOFTWARE PROJECT MANAGEMENT

Course code	CSE-403 F			
Category	Professional Core Course			
Course title	SOFTWARE PROJECT MANAGEMENT			
Scheme	L	T	P	SEMESTER 7
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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.

UNIT-2

Project Evolution & Estimation: Cost benefit analysis, cash flow forecasting, cost 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..

UNIT-3

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..

UNIT-4

Software quality: Introduction, the place of software quality in project planning, the importance of software quality, 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: via Project 2000 or equivalent

Course Outcomes (CO) & CO-PO Mapping

Course: Software Project Management

Course Code: CSE-403 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy's
CO1	To Recall the fundamental principles of software project management.	L1(Remember)
CO2	To Understand Estimation, Planning, And Tracking.	L2(Understand)
CO3	To Recognize good knowledge of responsibilities of a project manager.	L2(Understand)
CO4	To Interpret the importance of software quality and techniques to enhance software quality	L3(Apply)
CO5	To Compare and differentiate organization structures and project structures.	L4 (Analyze)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											2	2	3
CO2	2	3										2	1	2
CO3	2	2							2			2	2	3
CO4	2	2									3	2	3	1
CO5	2	3									2	2	2	1

COMPILER DESIGN

Course code	CSE-405 F			
Category	Professional Core Course			
Course title	COMPILER DESIGN			
Scheme	L	T	P	SEMESTER 7
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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.

UNIT-2

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

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

UNIT-3

LR Parser, SLR, LALR 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 tripls.

UNIT-4

Symbol Table & Error Detection And Recovery: Symbol tables, its contents and data structure for symbol tables; trees, arrays, linked lists, 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.

Text Book:

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

Reference Books:

1. Theory and practice of compiler writing, Tremblay & Sorenson, 1985, Mc. Graw Hill.
2. System software by Dhamdere, 1986, MGH.
3. Principles of compiler Design, Narosa Publication
4. Elements compiler Design, Dr. M. Joseph, University Science Press

Course Outcomes (CO) & CO-PO Mapping

Course: Compiler Design
Course Code: CSE-405 F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall the concepts, design and implementation of language processors i.e. compilers.	L1 (Remember)
CO2	To Illustrate the various aspects like grammars, languages and phases of compilers etc.	L2(Understand)
CO3	To Applying concept of First and follow of non-terminals and the ambiguity of Grammar.	L3(Apply)
CO4	To Analyze the syntax directed translations with syntax trees.	L4(Analyze)
CO5	To Evaluate the Code Optimization and Code Generation.	L5(Evaluate)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	3
CO2	2	3	2									1	2	2
CO3	2	2	3	2								1	1	2
CO4	2	2	3	2								1	2	3
CO5	2	2	2	3								1	3	2

Neural Network

Syllabus

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

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

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

UNIT-2

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

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

UNIT-3

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

Associative memories: Linear Association, Basic Concepts of recurrent Auto associative memory: retrieval algorithm, storage algorithm; by directional associative memory, Architecture, Association encoding & decoding, Stability.

UNIT-4

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

Text Books:

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

Reference Books:

1. “Neural Networks :A Comprehensive formulation”, Simon Haykin, 1998, AW

2. “Neural Networks”, Kosko, 1992, PHI.

3. “Neural Network Fundamentals” – N.K. Bose , P. Liang, 2002, T.M.H

4. Neural Network , T.N.Shankar, University Science Press

5. Neuro Fuzzy Systems, Lamba, V.K., University Science Press.

Course: Neural Networks

Course Code: CSE-407F

CO (Course Outcomes)		RBT*- Revised Bloom’s Taxonomy’s
CO1	To Understand the concept of Biological neurons and Activation function.	L2 (Understand)
CO2	To Describe the concepts ANN architecture in single and multi-layer Network.	L2 (Understand)
CO3	To Analyze various types of Models: MCP Model and Perceptron Network .	L4 (Analyze)
CO4	To Identify the types of Learning and their Learning concepts.	L4 (Analyze)
CO5	To Conceptualize about different types of Associative Memory.	L5 (Evaluate)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	1	2
CO2	3	2	1									1	2	2
CO3	2	3	1									1	2	2
CO4	2	3	1									1	2	3
CO5	2	3	1									1	2	1

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ADVANCED JAVA

Course code	CSE-409 F			
Category	Professional Core Course			
Course title	ADVANCED JAVA			
Scheme	L	T	P	SEMESTER 7
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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

NETWORKING: Connecting to a Server, Implementing Servers, Sending E-Mail, Making URL Connections, AdvancedSocket programming.

UNIT-2

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

UNIT-3

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.

UNIT-4

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 Customizes

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

TEXT & REFERENCE BOOK:

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

Course Outcomes (CO) & CO-PO Mapping

Course: Advanced Java
Course Code: CSE-409F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Describe the role of Server let & JSP for Web designing.	L2(Understand)
CO2	To Demonstrate the role of Spring & Struts.	L3(Apply)
CO3	To Differentiate between Hibernate & Spring.	L4(Analyze)
CO4	To Analyze Design Pattern of J2EE & Android.	L4(Analyze)
CO5	To Create Mail API for understanding of mail system.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	3	3
CO2	2	3	2									1	3	2
CO3	2	2	3	2								1	3	2
CO4	2	2	3	2								1	3	2
CO5	2	2	2	2								1	3	2

COMPILER DESIGN LAB

Course code	CSE- 411 F			
Category	Professional Core Course			
Course title	Compiler Design Lab			
Scheme	L	T	P	SEMESTER 6
	0	0	2	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

Content:

Practice of LEX/YACC of compiler writing.

Write a program to check whether a string belong to the grammar or not.

Write a program to generate a parse tree.

Write a program to find leading terminals.

Write a program to find trailing terminals.

Write a program to compute FIRST of non-terminal.

Write a program to compute FOLLOW of non-terminal.

Write a program to check whether a grammar is left Recursion and remove left Recursion.

Write a program to remove left factoring.

Write a program to check whether a grammar is operator precedent.

To show all the operations of a stack.

To show various operations i.e. read, write and modify in a text file.

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

Course Outcomes (CO) & CO-PO Mapping

Course: Compiler Design Lab

Course Code: LC-CSE-324-G

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Describe the concept of Lex/ Yacc Compilers.	L2(Understand)
CO2	To Use various aspects like grammar, languages, operators, left recursion using practical experiments.	L3(Apply)
CO3	To Analyze whether Regular Expressions belong to Grammar or not.	L4(Analyze)
CO4	To Analyze Lexical Analyzer for validating operators.	L4(Analyze)
CO5	To Evaluate the implementation of Operator Precedence Parser.	L5(Evaluate)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	2	3
CO2	2	3	2		2							1	2	2
CO3	2	2	3	2	2							1	1	2
CO4	2	2	3	2	2							1	2	3
CO5	2	2	2	3	2							1	3	2

Neural Network Using Matlab

Course code	CSE- 413 F			
Category	Professional Core Course			
Course title	Neural Network Using Matlab			
Scheme	L	T	P	SEMESTER 6
	0	0	2	
CO PO-PSO Articulation Matrices	25 Marks			
Class work	25 Marks			
Exam	50 Marks			
Total	03 Hours			
Duration of Exam	03 Hours			

Content:

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:

1. How the weights and bias values affect the output of a neuron.
2. 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).
3. How the weights and bias values are able to represent a decision boundary in the feature space.
4. How this decision boundary changes during training with the perceptron learning rule.
5. How the perceptron learning rule works for linearly separable problems.
How the perceptron learning rule works for non-linearly separable problems

Course Outcomes (CO) & CO-PO Mapping

Course: NEURAL NETWORKS USING MATLAB (CSE-413-F)

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy's
CO1	To Understand basic neuron models and learning algorithms by using Matlab's neural network toolbox	L2(Understand)
CO2	To Describe about different activation function (transfer function).	L2(Understand)
CO3	To Analyze how weights & bias values affect the output of neuron.	L4(Analyze)
CO4	To Identify how weights & bias values are able to represent a decision boundary in the feature space.	L4(Analyze)
CO5	To Conceptualize about perceptron learning rule works for linearly separable problems.	L5(Evaluate)

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	1	2
CO2	3	2	1		2							1	2	2
CO3	2	3	1		2							1	2	2
CO4	2	3	1		2							1	2	3
CO5	2	3	1		2							1	2	1

ADVANCED JAVA LAB

Course code	CSE- 415 F			
Category	Professional Core Course			
Course title	ADVANCED JAVA LAB			
Scheme	L	T	P	SEMESTER 6
	0	0	2	
Class work	25 Marks			
Exam	25 Marks			
Total	50 Marks			
Duration of Exam	03 Hours			

Content:

Development of programs relating to :

- x JDBC
- x Servlets
- x Beans
- x RMI
- x JSP

Course Outcomes (CO) & CO-PO Mapping

Course: Advanced Java Lab
Course Code: CSE-415F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Explain the basics of the Java.Net package	L2 (Understand)
CO2	To Demonstrate client-server interaction using Servlets.	L3 (Apply)
CO3	To Analyze applications to implement database interaction using JDBC.	L4 (Analyze)
CO4	To Develop Java Beans applications.	L6 (Create)
CO5	To Create server communication using TCP-IP and UDP.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	3	3
CO2	2	3	2		2							1	3	2
CO3	2	2	3	2	2							1	3	2
CO4	2	2	3	2	2							1	3	2
CO5	2	2	2	2	2							1	3	2

DISTRIBUTED OPERATING SYSTEM

Course code	CSE-423 F			
Category	Professional Core Course			
Course title	Distributed Operating System			
Scheme	L	T	P	SEMESTER 7
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

Introduction on: Introduction on to Distributed System, Goals of Distributed system, Hardware 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 Systems.

UNIT-2

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.

UNIT-3

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

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

UNIT-4

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.

Text Book:

- 1 Distributed Operating System – Andrew S. Tanenbaum, PHI.
- 2 Operating System Concepts, P.S.Gill, Firewall Media

Course Outcomes (CO) & CO-PO Mapping

Course: Distributed System (Elective)

Course Code: CSE-423F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Recall the Goals, Issues, hardware & software concepts of the Distributed system.	L1(Remember)
CO2	To Discuss the Communication & Synchronization Algorithms in Distributed System.	L2(Understand)
CO3	To Apply Scheduling & Processor Allocation Techniques for Load balancing.	L3(Apply)
CO4	To Analyze the Design & functioning of Distributed file System & Shared Memory.	L4(Analyze)
CO5	To Examine the security issues of Distributed System & Distributed Web-based System.	L4(Analyze)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	3	3
CO2	3	2										1	3	2
CO3	2	3	2									1	3	2
CO4	2	3	3									1	3	2
CO5	2	3	2									1	3	2

NETWORK SECURITY & MANAGEMENT

Course code	CSE-465 F			
Category	Professional Core Course			
Course title	Network Security & Management			
Scheme	L	T	P	SEMESTER 7
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

Introduction: Codes and Ciphers Some Classical systems–Statistical 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 – Cryptanalysis of stream ciphers – Combined encryption and encoding. Block Ciphers – DES and variant, modes of use of DES.

UNIT-2

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

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

UNIT-3

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

UNIT-4

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

Text Books:

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

Reference Books:

1. SNMP: A Guide to Network Management (MGH)
2. Telecom Network Management by H.H. Wang (MGH)
3. Network Management by U. Dlack (MGH)

Course Outcomes (CO) & CO-PO Mapping

Course: Network Security and Cryptography (Elective)

Course Code: CSE-465F

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy's
CO1	To Understand various attacks and need of Cryptography.	L2(Understand)
CO2	To Apply various substitution and transposition ciphers for securing a message.	L3(Apply)
CO3	To Analyze the need and functioning of various block ciphers.	L4(Analyze)
CO4	To Evaluate how to maintain the Confidentiality, Integrity and Availability.	L5 (Evaluate)
CO5	To Create various public key algorithm for securing the message.	L6(Create)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	1	2
CO2	2	2	1									1	1	1
CO3	3	2	2									1	1	2
CO4	2	2	2									1	1	1
CO5	2	2	2	2								1	1	1

ADVANCED DATABASE MANAGEMENT SYSTEMS

Course code	CSE-435 F			
Category	Professional Core Course			
Course title	Advanced Database Management System			
Scheme	L	T	P	SEMESTER 7
	3	1	0	
Class work	50 Marks			
Exam	100 Marks			
Total	150 Marks			
Duration of Exam	03 Hours			

Syllabus

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

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

UNIT-2

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-3

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-4

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.

Text Book:

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

Reference Book:

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

Course Outcomes (CO) & CO-PO Mapping**Course: Advanced Database Management System (Elective)****Course Code: CSE-435F**

CO (Course Outcomes)		RBT*- Revised Bloom's Taxonomy
CO1	To Describe Basic Components, Terms, Advantages and Disadvantages of DBMS.	L2(Understand)
CO2	To Illustrate the Transactions issues and concurrency control.	L2(Understand)
CO3	To Demonstrate the ER, EER, Network, Hierarchical and Relational data models.	L3(Apply)
CO4	To Analyze Parallel and Distributed Databases and Query Processing and Optimization.	L4(Analyze)
CO5	To Compare Object Oriented and Object Relational Databases.	L4(Analyze)

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2										1	3	3
CO2	2	3	2									1	2	2
CO3	2	2	3	2								1	2	2
CO4	2	2	3	2								1	3	2
CO5	2	2	3	2								1	2	2

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 (CO) & CO-PO Mapping

Course: Industrial Training/Institutional Project Work
Course Code: CSE-402-F

S.No.	Course Outcomes	Revised Bloom's Taxonomy
CO 1	Participate in the projects in industries during his or her industrial training.	L3 Apply
CO 2	Describe use of advanced tools and techniques encountered during industrial training and visit.	L4 Evaluate
CO 3	Interact with industrial personnel and follow engineering practices and discipline prescribed in industry.	L3 Apply
CO 4	Develop awareness about general workplace behavior and build interpersonal and team skills.	L6 Create
CO 5	Prepare professional work reports and presentations.	L6 Create

CO PO-PSO Articulation Matrices

Course Outcomes (COs)	(POs)												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2						3	3.00	3	2		2	3	3.00
CO2	2						3	3.00	3	2		2	3	3.00
CO3	2						3	3.00	3	2		2	3	3.00
CO4	2						3	3.00	3	2		2	3	3.00
CO5	2						3	3.00	3	2		2	3	3.00