4-Years B.TECH
COMPUTER SCIENCE AND ENGINEERING

WITH EFFECT FROM 2010-11 ADMITTED BATCH

SYLLABI
(Tentative)

CHAIRMAN
BOARD OF STUDIES

DEPARTMENT OF COMPUTER SCIENCE AND SYSTEMS ENGINEERING
COLLEGE OF ENGINEERING
ANDHRA UNIVERSITY
VISAKHAPATNAM-3

ANDHRA UNIVERSITY
COLEGE OF ENGINEERING - AUTONOMOUS
VISAKHAPATNAM

COMMON SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH
COMPUTER SCIENCE AND ENGINEERING

I/IV B.E./B.TECH. (FOUR YEAR COURSE) – SEMESTER SYSTEM
I & II SEMESTERS

CODE NO.	COURSE	CREDITS	PERIODS L/T/Lab.	Exam. Hours	Sessional Marks	Exam Marks	Total Marks
ENG 1001	ENGLISH	2	2 + 1	3	30	70	100
ENG 1002	MATHEMATICS-I	4	3	3	30	70	100
ENG 1003	MATHEMATICS-II	4	3	3	30	70	100
ENG 1004	PHYSICS THEORY	4	3	3	30	70	100
ENG 1005	CHEMISTRY THEORY	4	3	3	30	70	100
ENG 1006	HISTORY OF SCIENCE AND TECHNOLOGY	2	3	3	30	70	100
ENG 1007	COMP. PROG. & NUM. METHODS	4	3	3	30	70	100
ENG 1008	ENGINEERING GRAPHICS	5	2 + 4	3	30	70	100
ENG 1009	PHYSICS LABORATORY	2	--	3	50	50	100
ENG 1010	CHEMISTRY LABORATORY	2	--	3	50	50	100
ENG 1011	WORKSHOP	2	--	3	50	50	100
ENG 1012	PROGRAMMING LABORATORY	2	--	3	50	50	100
	TOTAL	**37**	**39**		**440**	**760**	**1200**

II/IV B.TECH. (CSE) I - SEMESTER

B.TECH. (CSE) 2nd YEAR I -SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessional	Total	
CSE 2.1.1	ELECTRONICS	3	1		70	30	100	4
CSE 2.1.2	ELEMENTS OF ELECTRICAL ENGINEERING	3	1		70	30	100	4
CSE 2.1.3	DATA STRUCTURES	3	1		70	30	100	4
CSE 2.1.4	DESCRETE MATHEMATICAL STRUCTURES-I	3	1		70	30	100	4
CSE 2.1.5	PROBABILITY, STATISTICS & QUEUING THEORY	3	1		70	30	100	4
CSE 2.1.6	DIGITAL LOGIC DESIGN	3	1		70	30	100	4
CSE 2.1.7	ELECTRONICS LAB.			3	50	50	100	2
CSE 2.1.8	DATA STRUCTURES LAB.			3	50	50	100	2
							TOTAL CREDITS	**28**

II/IV B.TECH. (CSE) II - SEMESTER

B.TECH. (CSE) 2nd YEAR II-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessional	Total	
CSE 2.2.1	OPERATIONS RESEARCH	3	1		70	30	100	4
CSE 2.2.2	DISCRETE MATHEMATICAL STRUCTURES-II	3	1		70	30	100	4
CSE 2.2.3	MICROPROCESSORS-I	3	1		70	30	100	4
CSE 2.2.4	COMPUTER ORGANIZATION	3	1		70	30	100	4
CSE 2.2.5	OBJECT ORIENTED PROGRAMMING	3	1		70	30	100	4
CSE 2.2.6	ENVIRONMENTAL STUDIES	3	1		70	30	100	2
CSE 2.2.7	MICROPROCESSORS-I LAB.	--	--	3	50	50	100	2
CSE 2.2.8	OBJECT ORIENTED PROGRAMMING LAB.	--	--	3	50	50	100	2
CSE 2.1.9	HUMAN VALUES & PROFESSIONAL ETHICS	2				100	100	2
							TOTAL CREDITS	**28**

III/IV B.TECH. (CSE) I - SEMESTER

B.TECH. (CSE) 3rd YEAR I-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessional	Total	
CSE 3.1.1	MICROPROCESSOR-II	3	1	--	70	30	100	4
CSE 3.1.2	SYSTEM PROGRAMMING	3	1	--	70	30	100	4
CSE 3.1.3	ELECTIVE – I	3	1	--	70	30	100	4
CSE 3.1.4	FORMAL LANGUAGES & AUTOMATA THEORY	3	1	--	70	30	100	4
CSE 3.1.5	FILE STRUCTURES	3	1	--	70	30	100	4
CSE 3.1.6	OPERATING SYSTEMS	3	1	--	70	30	100	4
FE01	FREE ELECTIVE-I	3	1	--	70	30	100	4
CSE 3.1.7	OPERATING SYSTEMS LAB.	--	--	3	50	50	100	2
CSE 3.1.8	MICROPROCESSOR-II LAB	--	--	3	50	50	100	2
CSE 3.1.9	SOFT SKILLS LAB.	--	--	3		100	100	1
							TOTAL CREDITS	**33**

ELECTIVE-I

[1]. COMPUTER GRAPHICS
[2]. DIGITAL SIGNAL PROCESSING
[3]. FAULT TOLERANT COMPUPTING
[4]. COMBINATORICS & GRAPH THEORY.

III/IV B.TECH. (CSE) II - SEMESTER

B.TECH. (CSE) 3rd YEAR II-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessional	Total	
CSE 3.2.1	COMPILER DESIGN	3	1	--	70	30	100	4
CSE 3.2.2	DESIGN & ANALYSIS OF ALGORITHMS	3	1	--	70	30	100	4
CSE 3.2.3	DATA BASE MANAGEMENT SYSTEMS	3	1	--	70	30	100	4
CSE 3.2.4	DATA COMMUNICATIONS	3	1	--	70	30	100	4
CSE 3.2.5	ELECTIVE – II	3	1	--	70	30	100	4
CSE 3.2.6	COMPUTER ARCHITECTURE	3	1	--	70	30	100	4
CSE 3.2.7	FILE STRUCTURES LAB.	--	--	3	50	50	100	2
CSE 3.2.8	DBMS LAB.	--	--	3	50	50	100	2
							TOTAL CREDITS	**28**

ELECTIVE - II

[1]. PRINCIPLES OF PROGRAMMING LANGUAGE
[2]. BIO-INFORMATICS
[3]. IMAGE PROCESSING.
[4]. VHDL

* The industrial training will be for three weeks during the summer after third year second semester.

IV/IV B.TECH(CSE) I - SEMESTER

B.TECH. (CSE) 4th YEAR I-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessional	Total	
CSE 4.1.1	OBJECT ORIENTED SOFTWARE ENGG.	3	1	--	70	30	100	4
CSE 4.1.2	COMPUTER NETWORKS	3	1	--	70	30	100	4
CSE 4.1.3	ARTIFICIAL INTELLIGENCE	3	1	--	70	30	100	4
CSE 4.1.4	PRINCIPLES OF ECONOMICS & MANAGEMENT	3	1	--	70	30	100	4
CSE 4.1.5	ELECTIVE-III	3	1	--	70	30	100	4
CSE 4.1.6	**WEB TECHNOLOGIES**	3	1	--	70	30	100	4
CSE 4.1.7	GRAPHICS &MULTIMEDIA LAB.	--	--	3	50	50	100	2
CSE 4.1.8	OBJECT ORIENTED SOFTWARE ENGG. LAB.	--	--	3	50	50	100	2
CSE 4.1.9	INDUSTRIAL TRAINING & SEMINAR*	-	-	-		100	100	2
						TOTAL CREDITS		**30**

ELECTIVE-III:

[1]. EMBEDDED SYSTEMS [2]. NEURAL NETWORKS & FUZZY LOGIC

[3]. RANDOM PROCESSES IN ENGINEERING.

* The industrial training will be for three weeks during the summer after third year second semester and assessment will be done in the 4th year first semester with a seminar on the training he/she got.

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IV/IV B.TECH. (CSE) II – SEMESTER

B.TECH. (CSE) 4th YEAR II-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessional	Total	
CSE 4.2.1	DISTRIBUTED OPERATING SYSTEMS	3	1	--	70	30	100	4
CSE 4.2.2	CRYPTOGRAPHY AND NETWORK SECURITY	3	1	--	70	30	100	4
CSE 4.2.3	ELECTIVE-IV	3	1	--	70	30	100	4
FE02	**FREE ELECTIVE-II**	**3**	**1**	**--**	**70**	**30**	**100**	**4**
CSE 4.2.4	DATA COMMUNICATIONS & NETWORK PROGRAMMING LAB	--	--	3	50	50	100	2
CSE 4.2.5	PROJECT	--	--	3	50	50	100	8
							TOTAL CREDITS	**26**

ELECTIVE-IV:

[1]DATA WARE HOUSING & DATA MINING [2] SERVICE ORIENTED ARCHITECTURE

I/IV B.E./B.TECH. (FOUR YEAR COURSE) – SEMESTER SYSTEM
I & II SEMESTERS

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ENG 1005	CHEMISTRY THEORY	4	3	3	30	70	100
ENG 1006	HISTORY OF SCIENCE AND TECHNOLOGY	2	3	3	30	70	100
ENG 1007	COMP. PROG. & NUM. METHODS	4	3	3	30	70	100
ENG 1008	ENGINEERING GRAPHICS	5	2 + 4	3	30	70	100
ENG 1009	PHYSICS LABORATORY	2	--	3	50	50	100
ENG 1010	CHEMISTRY LABORATORY	2	--	3	50	50	100
ENG 1011	WORKSHOP	2	--	3	50	50	100
ENG 1012	PROGRAMMING LABORATORY	2	--	3	50	50	100
	TOTAL	**37**	**39**		**440**	**760**	**1200**

ENGLISH

(Common to all the Branches – B.E./B.Tech/Dual degree ME/ M. Tech Courses and Architecture)

Theory Hours	Sessional Marks	External exam marks	Total Marks
3	30	70	100

Vocabulary: Word Search, Discuss and Note – Word Quiz – A List of 100 Basic Words – One Word Substitutes – 100 Difficult Words, Synonyms, Antonyms, Idioms, Technical terms

2)Grammar: Types of Sentences, Verbs, Adverbs, Pronouns, Adjectives, Gerunds & Infinitives, Articles, Quantifier, Punctuation, Prepositions, Conjunctions, Exclamation.

3)Reading: Famous People – What is Personality, Personality Based on Blood Groups – News Report, Magazine Article, Mobile Towers and Health – An Excerpt from a Short Story, An Excerpt from a Biography – Open Letter to Prime Minister, Business Dilemmas: An Email Exchange – A

Review of IPL: The Inside Story, Marck Zuckerberg: World's Youngest Billionaire – Solar Power: The Way Forward, From the Very Small to the Very Large

4)Listening: Life in a Hostel – Eating Away those Blues!, Meeting Carl Jung – A Documentary on the Big Cat – A Consultant Interviewing Employees – A Conversation about a Business Idea – An Interview with a Woman Engineer

5)Speaking: Your favourite Holiday Destination – Describe yourself – Why we need to Save OurTigers- a Dialogue – Your First Interview – Pair Work: Setting up a New Business – Great Engineering Achievements.

6)Scenario: Sharing a Flat – Living in the Twenty-First Century – Global warming – Reality TV – Recession – The Sky-High Project.

7)Writing: Writing Sentences – Using Your dictionary – Paragraph Writing, Arguing a Case – Essay, Formal Letters, Emails, Reports, Presentations.

8)Life Skills and Core Skills: Self Awareness and Self-Motivation – Communication, Adaptability – Motivation, Problem Solving – Personal Presentation Skills, Stress Management – Professionalism, Ethics – Innovativeness and Creativity.

Text Book:

Life Through Language: A Holistic Approach to Language Learning. Board of Editors, Pearson Publishers, India. 2013.

Reference Books:

1.*Basic Vocabulary.* Edgar Thorpe, Showick Thorpe. Pearson P. 2008.
2.*Quick Solutions to Common Errors in English.* Angela Bunt. MacMillan P. 2008
3.*ABC of Common Grammatical Errors.* Nigel D Turton. McMillan P. 1995.
4.*Business Communication Strategies.* Mathukutty Monippally. Tata Mc Grahill P. 2009

ENG 1002 Mathematics-I

Lectures/week = 3 Sessional Marks =30
Exam=3 Hrs, Exam. Marks = 70

I Partial Differentiation and its applications:

Functions of Two or More Variables, Partial Derivatives, Homogeneous Functions- Euler's Theorem, Total Derivative, Differentiation of Implicit Functions, Geometrical Interpretation- Tangent Plane and Normal to a surface. Change of Variables, Jacobians, Taylor's Theorem for functions of two variables, Errors and approximations. Total Differential, Maxima and Minima of functions of two variables. Lagrange's method of undetermined multipliers, Differentiation under the integral sign – Leibnitz Rule.

II Solid geometry:

Equation of a plane. Equations of Straight line. Condition for a line to lie in a plane. Coplanar lines. Shortest distance between two lines. Intersection of three planes. Equation of Sphere, Tangent plane to a sphere. Cone, cylinder, Quadratic surfaces.

III Multiple integrals and their applications:

Double integrals. Change of order of integration. Double integrals in Polar Co-ordinates, Areas enclosed by plane curves. Triple integrals. Volume of solids. Change of variables. Area of a curved surface. Calculation of Mass, Center of gravity, Center of pressure, Moment of inertia. Product of inertia. Principal Axes. Beta function, Gamma function. Relation between Beta and Gamma functions. Error function of Probability integral.

IV Infinite series:

Definitions. Convergence, Divergence and oscillation of a series, General properties, series of positive terms, comparison test, Integral test. D'Alembert's Ratio test. Raabe's test. Logarithmic test. Cauchy's Root test. Alternating series- Leibnitz's rule, Series of positive or negative terms. Power series. Convergence of Exponential, Logarithmic and Binomial series. Uniform convergence. Weirstrass M-test. Properties of uniformly convergent series (all tests without proofs).

V Fourier series:
Euler's formulae, Conditions for a Fourier expansion, Functions having points of discontinuity, Change of interval, Odd and even periodic functions – Expansions of odd and even periodic functions. Half range series. Parseval's formula, Practical Harmonic analysis.

Text Books:

1. Scope and Treatment as in "Higher Engineering Mathematics" by Dr. B.S Grewal,

   42^{nd} edition, Khanna publishers.

Reference Books:

1. A text book of Engineering Mathematics by N.P.Bali and Ieyangar, Lakshmi publications.
2. Advanced Engineering Mathematics by H.K.Dass. S.Chand Company.
3. Higher Engineering Mathematics by B.V Ramana, Tata McGraw Hill Company.

ENG 1003 Mathematics-II

Lectures/week = 3 Sessional Marks =30
Exam=3 Hrs, Exam. Marks = 70

I Linear Algebra:

Rank of a Matrix. Eigen values Eigen vectors of a Matrix. Cayley Hamilton Theorem. Consistency of linear simultaneous algebraic equations, Matrix Inversion, Gaussian Elimination, LU factorization. Jacobi and Gauss-Seidel iterative Methods for solving simultaneous equations. Determination of Eigen Values using forward iteration. (Rayleigh's power method), Hermitian and skew Hermitian matrices. Unitary Matrix, Quadratic forms and Canonical forms.

II Ordinary Differential Equations Of First Order And Its Applications:

Formation of differential equations. Solutions of a **differential** equation-geometrical meaning. Equations the first order and first degree, Variables separable, Homogeneous equations. Linear equations. Bernoulli's equations. Exact equations. Equation reducible to exact equations. Equations of the first order and higher degree, Clairaut's equation.
Applications: Orthogonal trajectories, Simple Electric circuits. Chemical reactions. Newton's law of cooling only.

III Linear Differential Equations:

Higher order linear differential equations with constant coefficients. Cauchy's and Legendre's linear equations, Simultaneous linear equations with constant coefficients.

IV Series solutions of differential equations:

Series Solutions of ODE-Frobenius method (when x=0 is a regular singularity),Bessel's equation, equations reducible to Bessel's equations. Legendre Polynomials, Rodrigue's formula, Generating function. Recurrence relations. Orthogonality relation for Bessel's functions and Legendre Polynomials.

V Laplace transforms:

Transforms of elementary functions. Properties of Laplace Transforms, Existence conditions, Inverse transforms, Transforms of derivatives, Transforms of Integrals. Multiplication by't'- division by't'. Convolution theorem. Applications to ordinary differential equations and simultaneous linear equations with constant coefficients. Laplace transforms of Unit step function, Unit Impulse function and Periodic functions.

Text Books:

1. Scope and Treatment as in "Higher Engineering Mathematics" by Dr. B.S Grewal, 42nd edition, Khanna publishers.

Reference Books:

1. A text book of Engineering Mathematics by N.P.Bali and Ieyangar, Lakshmi publications.
2. Advanced Engineering Mathematics by H.K.Dass. S.Chand Company.
3. Higher Engineering Mathematics by B.V Ramana, Tata McGraw Hill Company.

ENG. 1004 Physics

Lectures/week = 3 Sessional Marks =30
Exam=3 Hrs, Exam. Marks = 70

Thermodynamics

Heat and Work, First law of thermodynamics and applications, Reversible and Irreversible process, Carnot cycle and Efficiency, Entropy, Second law of thermodynamics, Entropy and disorder, Entropy and Probability, Third law of thermodynamics. Thermography and its Applications.

Electromagnetism

Concept of electric field – Point charge in electric field, dipole in an electric field. Gauss law, some applications, electric potential and field strength, potential due to a point charge and dipole.

Magnetic field – magnetic force on current, torque on current loop, Hall effect, Ampere's law, B near a long wire, B for a solenoid and Toroid. The Biot-Savart,s Law. B for a circular Current loop.

Faraday's law of induction. Lenz's law, Calculation of Inductance. L-R Circuit. Energy stored in Magnetic field. Induced magnetic fields, Displacement current. Energy density in Electric and Magnetic fields, Poynting Vector S.

Maxwells equations and Electromagnetic waves (Both differential and Integral forms). Magnetic properties of materials. Paramagnetism, Diamagnetism, Ferromagnetism, Ferrites and its applications.

Optics

Interference – Principles of superposition – Young's Experiment – Coherence – Interference of thin films, Wedge shaped film, Newtons Rings, Michelson Interferometer and its applications.

Diffraction – Single slit (Qualitative and quantitative treatment).

Polarisation – Polarisation by reflection, refraction and double refraction in uniaxial crystals, Nicol prism, Quarter and Half wave plate, circular and elliptical polarization and detection.

Lasers and Fibre Optics

Spontaneous and stimulated emissions, population inversions, Ruby laser, Gas laser, Semiconductor laser, Applications of lasers.

Fibre Optics, Optical Fibre and Total Internal Reflection, Acceptance Angle and cone of a fibre, Fibre optics in communications, Optical parts in Fibre. Fibre Optic Sensors.

Ultrasonics

Production of Ultrasonics by Magnetostriction and Piezoelectric effects – Ultrasonics and diffraction pattern, Applications of Ultrasonics.

Modern Physics

The quantization of energy, Photoelectric effect, De Broglie concept of matter waves, uncertainty principle, Schrodinger wave equation, application to a particle in a box.

Elementary concepts of Maxwell-Boltzman, Bose-Einstein's and Fermi Dirac Statistics. Fermi Dirac Distribution function (no derivations).

Free electron theory of metals, Band theory of solids, Kronig Penny Model, Metals, Insulators and Semiconductors. Ferroelectrics and their applications

Super conductivity, Meisner Effect, Types of Superconductors and Applications of Superconductors.

Nanophase materials – Synthesis, characterization of nanostructured materials, properties and applications.

Renewable energies – Solar, wind and tidal – Applications

Books Recommended

1. Engineering Physics by R.K. Gaur and S.D. Gupta
2. Physics by David Halliday and Robert Resnick – Part I and Part II
3. Modern Engineering Physics by A.S. Vadudeva
4. University Physics by Young and Freedman
5. Materials Science by V. Rajendra and A. Marikani
6. Nonconventional Energy by Ashoke V. Desai

ENG 1005 Chemistry

Lectures/week = 3 Sessional Marks =30
Exam=3 Hrs, Exam. Marks = 70

1. Water Chemistry and pollution:

Water Chemistry: Sources of water - impurities – Hardness and its determination – W.H.O. limits. Boiler troubles and their removal. Water softening methods – Lime Soda, Zeolite and Ion exchange. Municipal water treatment – Break point chlorination. Desalination of Sea Water - Electrodialysis and Reverse osmosis methods.

Water pollution: Source – BOD – COD – Sewage treatment - preliminary, primary, secondary and tertiary.

Air Pollution: Source – Air pollutants – CO, Sox, NOx, Hydrocarbons and particulates. Acid rain – Green House effect – control of Air pollution (General).

2. Solid State Chemistry:

Classification of Solids – Types of Crystals – Properties - imperfections in crystals. Band theory of solids. Chemistry of Semiconductors - Intrinsic, extrinsic, compound and defect. Organic semiconductors and superconductivity. Purification of solids by zone refining - Single crystal growth – epitaxial growth. Elementary ideas on liquid crystals.

Energy Sources:

Thermal Energy: Coal- Ranking of coal - analysis (proximate and ultimate) Calorific value and determination (Bomb calorimeter method) – COKE – Manufacture – Otto Hoffmann's process – Applications.

Chemical Energy: Electrode potential – Calomel electrode – Galvanic cells – primary secondary – Acid and alkaline cells – fuel cells.

Nuclear Energy: Fission and fusion – power rectors – Atomic pile applications.

Solar Energy : Methods of utilization – thermal conversion – Liquid Flat – Plate collector – Photovoltaic conversion - solar cell - Applications.

3. Corrosion Chemistry :

Origin and theories of corrosion – Types of corrosion - Factors affecting corrosion – corrosion control methods. Protective coatings –Metallic coatings – Chemical conversion coatings - phosphate, chromate, Anodized. Organic Coating – paints – special paints – Varnishes and lacquers.

4. Fuels and Lubricants:

Petroleum – refining - Motor fuels – Petrol and Diesel Oil - Knocking – Octane number - Cetane number. Synthetic petrol – Fisher - Tropsch and Bergius methods. LPG and CNG - Applications. Rocket fuels -Propellants - Classification.

Lubricants: Classification - mechanism - properties of lubricating oils - Selection of lubricants for Engineering applications.

5. Polymers and Plastics:

Definition – Types of polymerization – Mechanism of addition polymerization. Effect of polymer sructure on properties. Plastics – Thermoplastic resins and Thermosetting resins - Compounding of plastics – Fabrication of plastics. Preparation and properties of cellulose derivatives - Vinyl resins-Nylon(6,6)- bakelites – polycarbonates - epoxy resins. Reinforced plastics. Conducting polymers. Engineering applications of polymers.

6. Building Materials:

Portland Cement: Manufacture - Dry and Wet process. Setting and hardening of cement - Cement concrete - RCC - Decay of concrete - special cements.

Refractories: Classifications - properties - Engineering applications.

Ceramics: Classification - Properties - uses.

Prescribed Text Books

1. Engineering Chemistry, P.C. Jain and M. Jain - Dhanapathi Rai & Sons, Delhi
2. A text book of Engineering Chemistry, S.S. Dara - S. Chand & Co. New Delhi
3. Engineering Chemistry, B.K. Sharma - Krishna Prakashan, Meerut
4. A text book of Engineering Chemistry, - Allied Publishers Balasubramanian et.al.,
5. Material Science and Engineering V. Raghavan - Prentice-Hall India Ltd.,

ENG 1006 History of Science and Technology

Lectures/week = 3 Sessional Marks =30
Exam=3 Hrs, Exam. Marks = 70

1. Historical Perspective:
The Nature of Science and Technology, Roots of Science and Technology in India, Science and Society, Scientists and Society, Science and Faith and The Rise of Applied Sciences.

2. Polices and Plans After Independence:
Nehru's vision of Science for Independent India, Science and Technology Developments in the New Era Science and Technology Developments during the Five Year Plan Periods and Science and Technology Policy Resolutions.

3.Research and Development (R&D) in India:
Expenditure in R&D, Science and Technology Education, Research Activities and Promotion of Technology Development, Technology Mission, Programms Aimed at Technological self-Reliance, Activities of Council of Scientific and Industrial Research (CSIR).

4.Science and Technological Developments in Major Areas:
Space – Objectives of Space Programms, Geostationary Satellite Services – INSAT System and INSAT Services Remote Sensing Applications, Launch Vehicle Technology
Ocean Development – Objectives of Ocean Development, Biological and Mineral Resources, Marine Research and Capacity Building;
Defense Research --- Spin –off Technologies for Civilian Use;
Biotechnology--Applications of Biotechnology in – Medicine, Biocatalysts, Agriculture, Food, Fuel and Fodder, Development of Biosensors and Animal Husbandry;
Energy – Research and Development in Conservation of Energy, India's Nuclear Energy Programme – Technology Spin –offs.

5.Nexus between Technology Transfer and Development:
Transfer of Technology—Types, Methods, Mechanisms, Process, Channels and Techniques: Appropriate Technology, Technology Assessment, Technological Forecasting, Technological Innovations and Barriers of Technological Change.

Test Books:
1. Kalpana Rajaram , **Science and Technology in India,** Published and Distributed by Spectrum Books (P) Ltd., New Delhi-58.
2. Srinivasan, M., Management of Science and Technology (Problems & Prospects), East – West Press (P) Ltd., New Delhi.

Reference Books:
1. Ramasamy, K. A. and Seshagiri Rao, K.,(Eds**.) Science, Technology and Education for Development,** K., Nayudamma Memorial Science Foundation, Channai-8.
2. Kohili, G. R., **The Role and impact of Science and Technology in The development of India,** Surjeet Publications.
3. Government of India, **Five Year Plans**, Planning Commission, New Delhi. Sharma, K. D. and Quresh M. A., **Science, Technology and Development**, Sterling Publications (P) Ltd. New Delhi.

ENG 1007 Computer Programming and Numerical Methods

Lectures/week = 3 Sessional Marks =30
Exam=3 Hrs, Exam. Marks = 70

Objectives:

To make the student familiar with programming in C and enable the student to implement the numerical methods described in this course using C as Programming Language

Section A

Computer Programming in C

Basics: Variables – Constants – Expressions – Operators and their precedence and associativity. Basic input and output statements. Control structures. Simple programs in C using all the operators and control structure.

Functions: Concept of a function – Parameters and how they are passed – Automatic Variables – Recursion – Scope and extent of variables. Writing programs using recursive and non-recursive functions.

Arrays and Strings: Single and multidimensional arrays-Character array as a string- Functions on strings. Writing C Programmes using arrays and for string manipulation.

Structures: Declaring and using structures-Operations on structures – Arrays of structures-User defined data types-Pointers to using files.

Files: Introduction –file structure- File handing functions- file types- Files- Error handing- C Programming examples for using files.

Section B

Computer Oriented Numerical Methods

1. Basic Concepts: Preliminary Concepts of Algorithms-Flow Charts and their execution traces- A Simplified Model of a Computer.
2. Representation for Characters and Numbers: Representation for integer and real numbers. Effect of finite representation on arthimatic operations for example overflow, underflow, associativity and normalization. Some elementary methods for overcoming these limitations.
3. Numerical Methods: Notation of round-off and truncation errors, numerical methods of finding roots of an algebraic equation of one variable. Successive bisection method, False position method, Newton Raphson method and Secant method.
4. Solutions of simultaneous Algebraic Equations; Gauss elimination method and Gauss Seidal methods.
5. Interpolation: Lagrange's Interpolation and difference table methods.
6. Numerical integration: Simpson's rule, Gaussian Quadrature Formula.
7. Numerical Solution of Differential Equation: Euler's method, Taylor's seriesmethod and Runge-Kutta method.

Books:

1. Section A: Programming with C by K.R.Venugopal& Sudeep R Prasad
2. Section B: Introduction to Numerical Methods by S.S Sastry
3. Elementary Numerical Methods by S.D.Conte

Reference:

1. C Programming Language byKerningham & Ritchie

ENG 1008 Engineering Graphics

Lectures/week = 2+4 Sessional Marks =30
Exam=3 Hrs, Exam. Marks = 70

Introduction:

Drawing Instruments and uses. Lettering scales in common use.

Curves:

Curves used in Engineering Practice, conic sections, construction of conics by different methods, rectangular-hyperbola, cycloidal curves, trochoids, epi and hypo-cycloids. involutes and Archemedian spiral.

Orthographic Projections:

Projection of points, projection of straight lines, traces of a line, projection of planes and projection on auxiliary planes.

Solids and Developments:

Projection of solids in simple positions, projection of solids with axis inclined to one of the reference planes and parallel to the other, projection of solids with axis inclined to both the reference planes. Projection of spheres. Development of surfaces of solids. Development of transition piece connecting a square and circular pipe. Helices and screw threads.

Sections and Intersections:

Sections of different solids and true shape of sections. Intersection of surfaces-simple problems with cylinders, prisms and cones.

Isometric and Perspective Projections:

Isometric projection and conversion of orthographic projection into isometric projection. Perspective projection. Theory of visual ray method and vanishing point method. Simple problems involving regular geometrical solids.

Textbook:

1. Elements of Engineering Drawing by N.D. Bhatt

Reference:

1. Engineering Graphics by K.L. Narayana and P. Kannaiah

ENG 1009 Physics Laboratory

Practicals/week = 3 Sessional Marks =50
Exam=3 Hrs, Exam. Marks = 50

12 of the following experiments must be completed:

1. Lee's method- determination of coefficient of thermal conductivity of a bad conductor

2. Melde's experiment-determination of the frequency of an electrically maintained tuning fork.

3. Newton's rings – determination of radius of curvature of a convex lens.

4. Diffraction grating-determination of wavelengths in mercury line spectrum-using spectrometer

5. Determination of Cauchy's constants using Spectrometer and mercury light.

6. Wedge method-det. of thickness of a paper by forming parallel interference fringes.

7. Michelson's interferometer- a) det. of wavelength of light b) Resolution of spectral lines.

8. Det. of 'μ' using calcite crystal.

9. Optical Bench – a) Young's double slit b) Lloyd's mirror c) biprism d) diffraction at an edge e) Thickness of wire

10. Ultrasonic Diffraction – Velocity of ultrasonic waves in liquids.

11. Variation of magnetic field along the axis of current carrying circular coil – Stewart and Gee's apparatus

12. Calibration of voltmeter using potentiometer

13. Carey Foster's bridge a) laws of resistance b) temperature coefficient of resistance

14. B-H curves – determination of hysterisis loss

15. Calendar and Barnes method – determination of specific heat of water

16. Hall effect – a) Determination of hall coefficient B) determination of charge density

17. Photoelectric effect – a) characteristics of photoelectric cell b) det. of Planck's const.

18. Determination of Rydberg constant using hydrogen discharge tube

19. Determination of e/m of am electron – Thomson's method

20. Determination of band gap of semi conductor.

ENG 1010 Chemistry Laboratory

Practicals/week = 3 Sessional Marks =50
Exam=3 Hrs, Exam. Marks = 50

List of Experiments:

01. Determination of Sodium Carbonate.
02. Determination of Sulfuric acid using a strong base.
03. Estimation of Iron (II) using Potassium Permanganate.
04. Estimation of Oxalic Acid using Potassium Permanganate.
05. Determination of volume strength of Hydrogen Peroxide.
06. Estimation of Calcium in a sample of Portland cement.
07. Estimation of Chromium (VI) using Ferrous Ammonium Sulphate.
08. Estimation of Copper (II) using Sodium thiosulphate.
09. Analysis of Bleaching powder for Chlorine content.
10. Estimation of Zinc by EDTA method.
11. Determination of hardness of a water sample (EDTA Method).
12. Determination of alkalinity of a water sample.

Demonstration Experiments:

13. Determination of Viscosity of a Lubricating oil.
14. Preparation of Copper pigment.
15. Preparation of Phenol-Formaldehyde resin.
16. Digital pH meter.
17. Digital potentiometer.
18. D.O. Analyser.

ENG 1011 Workshop

Practicals/week = 3 Sessional Marks =50
Exam=3 Hrs, Exam. Marks = 50

1. Carpentry:
Bench work, tools used in carpentry.

Jobs for class work – half lap joint, mortise and tenon joint, half –lap dovetail joint, corner dovetail joint, bridle joint.

2. Sheet Metal:
Tools used in sheet metal work. Laying developments of sheet metal jobs, soldering.

Jobs for class work – square tray, taper side tray, funnel, elbow pipe.

3. Fitting:
Tools used in fitting work. Different files, chisels, hammers and bench vice.

Jobs for class work – hexagon, rectangular, circular and triangular fits. External and internal threads with dies and taps.

Reference:

1. Elements of Workshop technology, Vol.1 by S.K. and H.K. Hajra Choudary

ENG 1012 Programming Laboratory

Practical's/week = 3 Sessional Marks =50
Exam=3 Hrs, Exam. Marks = 50

1. Write a program to read x,y coordinates of 3 points and then calculate the area of a triangle formed by them and print the coordinates of the three points and the area of the triangle. What will be the output from your program if the three given points are in a straight line?
2. Write a program, which generates 100 random integers in the range of 1 to 100. Store them in an array and then print the arrays. Write 3 versions of the program using different loop constructs. (e.g. for, while, and do while)
3. Write a set of string manipulation functions e.g. for getting a sub-string from a given position, Copying one string to another, Reversing a string, adding one string to another.
4. Write a program which determines the largest and the smallest number that can be stored in different data types like short, int., long, float and double. What happens when you add 1 to the largest possible integer number that can be stored?
5. Write a program, which generates 100 random real numbers in the range of 10.0 to 20.0, and sort them in descending order.
6. Write a function for transposing a square matrix in place (in place means that you are not allowed to have full temporary matrix).
7. First use an editor to create a file with some integer numbers. Now write a program, which reads these numbers and determines their mean and standard deviation.
8. Given two points on the surface of the sphere, Write a program to determine the smallest arc length between them.
9. Implement bisection method to find the square root of a given number to a given accuracy.
10. Implement Newton Raphson method to det. a root of polynomial equation.
11. Given a table of x and corresponding f(x) values, write a program which will determine f(x) value at an intermediate x value using Lagrange's interpolation.
12. Write a function which will invert a matrix.
13. Implement Simpson's rule for numerical integration.
14. Implement Gaussian quadrature for numerical integration.
15. Write a program to solve a set of linear algebraic equations.

B.TECH. (CSE) 2nd YEAR I -SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessional	Total	
CSE 2.1.1	ELECTRONICS	3	1		70	30	100	4
CSE 2.1.2	ELEMENTS OF ELECTRICAL ENGINEERING	3	1		70	30	100	4
CSE 2.1.3	DATA STRUCTURES	3	1		70	30	100	4
CSE 2.1.4	DESCRETE MATHEMATICAL STRUCTURES-I	3	1		70	30	100	4
CSE 2.1.5	PROBABILITY, STATISTICS & QUEUING THEORY	3	1		70	30	100	4
CSE 2.1.6	DIGITAL LOGIC DESIGN	3	1		70	30	100	4
CSE 2.1.7	ELECTRONICS LAB.			3	50	50	100	2
CSE 2.1.8	DATA STRUCTURES LAB.			3	50	50	100	2
							TOTAL CREDITS	**28**

CSE2.1.1 **ELECTRONICS** **Credits:4**

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam: 3Hours Univ-Exam-Marks:70

I. **Semiconductors:**
Electronic Emission frommetal carrierconcentration in an intrinsicSemi-conductorsopen circuitedPNjunction–diffusion.

II. **PNJunctionDiode:**
PNJunctionDiode,VICharacteristicsofPNJunctionDiode,capacitateeffectsinPN Junction Diode, Quantitative theory of PN Junction Diode.

III. **Special Devices:**
Principles,Workingofzener diode,Tunneldiode,Varactordiode,Schottkydiode, SCRandUJT.

IV. **Transistors:**
The bipolar junctionTransistor – OperationofPNPand NPN Transistors – Transistor Circuit configurations- characteristics of a CE configurations – h parameter, low frequency small signal equivalent circuit of a Transistor.

V. **TransistorBiasingandthermalstabilization:**
TransistorBiasing, stabilization,Differentmethodsoftransistorbiasing–Fixed bias,Collectorfeedbackbias–selfbias–Biascompensation.

VI. **Field Effect Transistors:**
Junction Field Effect Transistors (JFET) – JFET characteristics, JFET Parameters, Smallequivalentcircuit–MOSFETS – Depletion and Enhancement MOSFETS.

VII. **Rectifying circuits:**
Half-waveandfull-waverectifiers–Bridge rectifiers–rectifier efficiency, Ripple andregulation–Shuntcapacitor filter–Zenerregulation.

VIII. **Transistor Amplifiers:**
CE, CB, CC amplifier configurations – Analysis using h- parameters – Multistage amplifier – RC coupled amplifier – frequencyresponsecurveandbandwidth.

TEXT BOOK:
Electronic Device and Circuits by Sanjeev Guptha

REFERENCE:
Integrated Electronics by Millman&Halkias.

CSE2.1.2 ELEMENTSOF ELECTRICAL ENGINEERING Credits:4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3Hours Univ-Exam-Marks:70

Magnetic circuits:Definitionsofmagneticcircuit,Reluctance,Magneto-motiveforce, magnetic flux, Simple problems on magnetic circuits, Hysterisis loss.

Electromagnetic Induction: Faraday's laws of Electromagnetic Induction, Induced E.M.F., Dynamically induced E.M.F., Statistically induced EMF,Self-Inductance,MutualInductance.

D.C. Generators:D.C.Generator principle, construction of D.C.generator, E.M.F equationofD.C.generator,TypesofD.C.generator,Efficiency,CharacteristicsofD.C. generator,Efficiency,ApplicationsofD.C.generator

D.C. Motors:D.C. Motorprinciple,workingofD.C.Motors.significance of back E.M.F.,TorqueequationofD.C.Motors,TypesofD.C.Motors,CharacteristicsofD.C. Motors,SpeedcontrolmethodsofD.C.Motors,ApplicationsofD.C.Motor.Testingof D.C.Machines:LossesandEfficiency,Directloadtest and Swinburne's test.

A.C. Circuits:Introduction to Steady State AnalysisofA.C.Circuits,SingleandBalanced3PhaseCircuits.

Transformers: Transformerprinciple,EMFequationoftransformer,Transformeron load,EquivalentcircuitofTransformer,VoltageregulationofTransformer,Lossesina Transformer,CalculationofEfficiencyandRegulationbyOpencircuitandShortcircuit Tests.

ThreephaseInductanceMotor:InductionMotorworkingprinciple.Constructionof3Phase induction Motor, Principle of operation. Types of 3 phase induction Motor, TorqueEquationofInductionMotor,slip–Torquecharacteristics,StartingTorque,Torqueunderrunningcondition,MaximumTorqueEquation,PowerstagesofInduction Motor, Efficiency Calculation of InductionMotorbydirectloading.

Alternator:Alternatorworkingprinciple,EMFequationofAlternator,Voltage RegulationbySync.Impedancemethod.

Synchronous Motor: SynchronousMotorprincipleofOperation, Construction,Methods of starting of synchronous motor

TextBook:
"ElementsofElectricalEngineeringandElectronics" byV.K.Mehta, S. Chand & Co

ReferenceBook:
"A First Course in Electrical Engineering" by Kothari.

CSE 2.1.3 **DATASTRUCTURES** **Credits:4**

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3Hours Univ-Exam-Marks:70

IntroductiontoDataStructures: Information and Meaning – Representation of Multi-DimensionalArrays-ReviewofC- Programming.

TheStack: Primitive operations – As anAbstractDataType–ImplementingtheStack operations in C.

Infix, Postfix and Prefix: Definitions,EvaluationandConversions usingC.

Recursion:RecursiveDefinitionandProcesses,RecursioninCandRecursiveImplementation of Applications. Simulationof Recursion–Efficiencyof Recursion.

QueuesandLists:TheQueueasAbstractDataType–SequentialRepresentation - TypesofQueues – Operations – Implementation in C.

Linked List:Operations – Implementation of Stacks, QueuesandpriorityQueuesinC.

CircularLists:Insertion,DeletionandConcatenationOperations_StacksandQueuesas CircularLists – DoublyLinkedLists - Applications.

Trees:Binary Trees Operations and Applications.

BinaryTreeRepresentation:NodeRepresentation – ImplicitarrayRepresentation - Choice ofRepresentation– BinaryTreeTraversal–ThreadedBinaryTreesandtheirTraversal–Trees andtheirApplications

Sorting:GeneralBackground:Efficiency–Thebig 0Notation–EfficiencyofSorting.Bubble SortandQuickSortandtheirEfficiency–SelectionSorting–BinaryTreeSort–HeapSort– InsertionSorts–Shell Sort– AddresscalculationSort–MergeandRadixSorts.

Searching:BasicSearchingTechniques:DictionaryasanAbstract DataType–AlgorithmicNotation– SequentialSearchinganditsEfficiency – Binary Search– Interpolation Search.

TreeSearching:InsertionintoaBinarySearchTree–DeletingfromaBinarySearchTree– Efficiency of Binary Search Tree operation

GraphsandTheirApplication:Graphs:ApplicationofGraphs– RepresentationofGraphsinC–Transitiveclosure– Warshall'sAlgorithm–ShortestPathAlgorithm.

LinkedRepresentationofGraphs:Dijikstra'sAlgorithm–Organizing thesetofGraphNodes– ApplicationtoSchedulinganditsimplication.
GraphTraversalandSpanningForests–UndirectedGraphandtheirTraversals,Applications and Efficiency – Minimal Spanning Trees –Prim'sandKruskal'sAlgorithms.

Textbooks:
1.DataStructures UsingCand C++YiddishLangsam, MosheJ.AugensteinandAaronM. Tanenbaum, Prentice HallOf India (2nd Edition)(Chapters1to8)
2. Data Structures, Algorithms and Applications withC++, SahaniMc-GrawHill.

Note:All Implementation are Using C Language only.

CSE 2.1.4 DISCRETE MATHEMATICALSTRUCTURES-I Credits:4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3Hours Univ-Exam-Marks:70

Introduction: Sets – Operationsonsets – relations –functions – Proofmethodsandproblem solvingstrategies-FundamentalsofLogic – Logicalinferences – Methodsofproofofan implication-FirstOrderlogicandOtherProofmethods–Rulesofinferenceforquantified Propositions-Mathematical Induction

ElementaryCombinatorics: BasicsofCounting – CombinationsandPermutations-Their Enumeration withand without repetition-Binomial coefficients-Binomial and Multinomial Theorems-The PrincipleofInclusion-Exclusion.

Recurrence Relations: Generating Functions of Sequences-Calculating their Coefficients– Recurrencerelations – Solvingrecurrencerelations– Methodofcharacteristic Roots- Non-homogeneous Recurrence relationsandtheirsolutions

RelationsandDigraphs: RelationsandDirectedGraphs – SpecialPropertiesofBinary relations- Equivalence Relations-Ordering Relations-Lattices and Enumeration– Operationsonrelations-PathsandClosures – DirectedGraphsandAdjacencymatrices- Applications of sorting, searching and topological sorting.

Graphs: Basic concepts – Isomorphism– subgraphs-Planar Graphs-Euler's formula- Multigraphs and Euler circuits-Hamiltonian graphs-Chromatic numbers-Four-color theorem.

Trees: Treesandtheirproperties–Treesasgraphs – spanningtrees – Directedtrees-Binary trees– Theirtraversals-Arithmetic and Boolean expressionsastrees– heightbalancedtrees.

Text Book:

"Discrete Mathematicsfor computer scientists& Mathematicians" by Joe L. Mott, AbrahamKandel& T. P. Baker, Prentice Hall of India Ltd, New Delhi

Reference Books:

1) "Discretemathematicsanditsapplications"byKenneth.H.Rosen, TataMcGraw- Hill Publishing Company, New Delhi
2) "Discretemathematics"byRichardJohnsonbaug,Pearson Education, New Delhi

CSE 2.1.5 PROBABILITY, STATISTICS&QUEUINGTHEORY Credits:4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3Hours Univ-Exam-Marks:70

Probability: Definitionsof probability, Addition theorem, Conditional probability, Multiplication theorem, Bayes theorem ofprobability and Geometric probability.

Random variables and their properties, Discrete Randomvariable, Continuous Random variable, Probability Distribution joint probabilitydistributions their properties, Transformationvariables,Mathematicalexpectations, probability generatingfunctions.

ProbabilityDistributions/Discretedistributions: Binomial, Poisson Negative binominal distributions and their properties. (Definition, mean, variance, moment generating function, Additive properties, fitting of the distribution.)

Continuous distributions: Uniform, Normal, exponential distributions and their properties.

Curve fitting using Principle of Least Squares.

Multivariate Analysis: Correlation, correlationcoefficient, Rank correlation, Regression Analysis, Multiple Regression, Attributes, coefficient of Association, χ^2 – test for goodness of fit, test for independence.
Sample, populations, statistic, parameter, Samplingdistribution,standarderror, unbiasedness, efficiency, Maximum likelihoodestimator, notion & interval estimation.

Testing of Hypothesis: Formulation of Nullhypothesis,criticalregion,levelof significance, power of the test.

Small Sample Tests: Testing equality ofmeans, testing equality of variances, test of correlation coefficient, test for Regression Coefficient.

Large Sample tests: Tests basedonnormaldistribution

Queuingtheory: Queuedescription,characteristics of a queuing model, study state solutions of **M/M/1:**α Model, M/M/1; N Model.

Text Book:
Probability,Statisticsand RandomProcessesby T.Veerarajan,TataMcGrawHill

Reference Book:
Probability & Statisticswith Reliability, Queuing and Computer ApplicationsbyKishorS.Trivedi,PrenticeHallofIndia,1999

CSE2.1.6 **DIGITALLOGICDESIGN** **Credits:4**

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.-Exam:3Hours Univ-Exam-Marks:70

1. Binary Systems, Boolean Algebra and Logic Gates.

Digital Systems. Binary Numbers. NumberBaseConversions.OctalandHexa-decimal Numbers.Complements. Signed Binary Numbers.BinaryCodes.BinaryStorageand Registers. Binary LogicBasic Definitions. Axiomatic Definition of Boolean Algebra. Basic Theorems and Properties of Boolean Algebra. Boolean Functions. Canonical and Standard Forms. OtherLogicOperations.Digital LogicGates.Integrated Circuits.

2. Combinational Logic Design, Gate-LevelMinimization.

The Map Method. Four-Variable Map. Five-Variable Map. Product of Sums Simplification. Don't-Care Conditions. NAND and NOR Implementation. Other Two- Level Implementations. Exclusive-OR Function HardwareDescriptionLanguage(HDL).

Combinational Logic

Combinational Circuits. Analysis Procedure.DesignProcedure.BinaryAdder-Subtractor.DecimalAdder.BinaryMultiplier.MagnitudeComparator.Decoders. Encoders.Multiplexers.HDLForCombinationalCircuits.

3. Sequential Logic Design, Synchronous Sequential Logic

SequentialCircuits.Latches.Flip-Flops.Analysisof ClockedSequentialCircuits. HDLForSequentialCircuits.StateReductionandAssignment.DesignProcedure.

Registers and Counters.

Registers. Shift Registers. Ripple Counters. Synchronous Counters. Other Counters. HDL for Registers and Counters.

FundamentalsofAsynchronousSequentialLogic

Introduction. Analysis Procedure. Circuits With Latches. Design Procedure. Hazards

4.MemoryandProgrammableLogic

Introduction. Random-Access Memory. Memory Decoding. Error Detection and Correction.Read-OnlyMemory.Programmable Logic Array. Programmable Array Logic. Sequential Programmable Devices.

TEXTBOOK:

DigitalDesign,3rd Edition,M.MorrisMano,PearsonEducation,Inc.,2002

REFERENCEBOOKS:

1. Digital Logic DesignPrinciples,NormanBalabanianandBradley Carlson,JohnWiley &Sons(Asia) Pte.Ltd.,2002
2. Fundamentals of Digital Circuits, A. AnandaKumar, PHI, 2002
3. Digital Circuits and Design,2nd Edition,SSalivahananand SArivazhagan, Vikas Publishing House Pvt.Ltd., 2003
4. Fundamentals of DigitalLogic with VHDLDesign, Stephen Brown andZvonkoVranesic,TataMcGraw-HillEdition,2002

CSE2.1.7 **ELECTRONICS LAB** **Credits:2**

Lab: 3 Periods/week SessionalMarks:50

Univ.Exam:3Hours Univ-Exam-Marks:50

1. Familiarization of electronics component and equipment's like C.R.O, Function generator and power supplies etc.

2. To study the V-I characteristics of pn junction diode and determine static resistance and dynamic resistance.

3. To study the characteristics of zener diode and hence determine the dynamic resistance from the characteristics.

4. Determine the voltage regulation of zener diode stabilizer.

5. To study and plot the wave form of half wave and full wave rectifier with and without capacitor filter.

6. To study and plot the input and output characteristics of common emitter transistor and calculate its input and output resistance.

7. To study and plot the input and output characteristics of common base transistor and calculate its input and output resistance.

8. To study the characteristics of FET(Field effect transistor) and hence calculate dynamic (rd), mutual conductance (gm) and amplification factor(μ).

9. To study the frequency response of single stage CE amplifier and hence calculate the band width (3dbBW).

10. To demonstrate the operation, characteristics and design of a saturated bipolar transistor switch.

CSE2.1.8 **DATA STRUCTURES LAB** **Credits:2**

Lab: 3 Periods /week SessionalMarks:50
Univ.Exam:3Hours Univ-Exam-Marks:50

1. Write a program to implement the operations on stacks.
2. Write a program to implement the operations on circular queues
3. Write a program for sorting alist using Bubble sort and then apply binary search.
4. Write a program to create a binary search tree and for implementing the in order, preorder, post order traversal using recursion
5. Write a program for finding the Depth First Search of a graph, and Breadth FirstSearchofagraph
6. Write a program for converting a given infix expression to postfix form
7. Write a program for evaluating a given postfix expression
8. Write a program for implementing the operations of a dequeue
9. Write a program for the representation ofpolynomialsusingcircularlinkedlistand for the addition of two such polynomials.
10. Write a program for quick sort
11. Write a program for Heap sort
12. Write a program for Merge sort.
13. a) Write a programfor finding the transitive closure of a digraph

b) Write a program for finding the shortest pathfromagivensourcetoanyvertexina digraph usingDijkstra's algorithm

B.TECH. (CSE) 2nd YEAR II-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessional	Total	
CSE 2.2.1	OPERATIONS RESEARCH	3	1		70	30	100	4
CSE 2.2.2	DISCRETE MATHEMATICAL STRUCTURES-II	3	1		70	30	100	4
CSE 2.2.3	MICROPROCESSORS-I	3	1		70	30	100	4
CSE 2.2.4	COMPUTER ORGANIZATION	3	1		70	30	100	4
CSE 2.2.5	OBJECT ORIENTED PROGRAMMING	3	1		70	30	100	4
CSE 2.2.6	ENVIRONMENTAL STUDIES	3	1		70	30	100	2
CSE 2.2.7	MICROPROCESSORS-I LAB.	--	--	3	50	50	100	2
CSE 2.2.8	OBJECT ORIENTED PROGRAMMING LAB.	--	--	3	50	50	100	2
CSE 2.2.9	HUMAN VALUES & PROFESSIONAL ETHICS	2				100	100	2
							TOTAL CREDITS	**28**

CSE 2.2.1 **OPERATIONS RESEARCH** **Credits:4**

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3Hours Univ-Exam-Marks:70

Overviewof operationsResearch:OR models–OR Techniques

LinearProgramming:Introduction –Graphicalsolution;Graphicalsensitivityanalysis–Thestandard form oflinear programming problems –Basicfeasiblesolutions- unrestricted variables –simplex algorithm–artificialvariables– BigMandtwo phasemethod– Degeneracy – alternativeoptima– unboundedsolutions– infeasiblesolutions.

Dualproblems-Relation betweenprimal and dualproblems – Dual simplexmethod Transportation model – starting solutions.North WestcornerRule-lowest cost method –Vogels approximation method – Transportation algorithms –Assignment problem– Hungarian Method.

NetworkModels:Definitions – CPMand PERT–TheirAlgorithmsIntegerProgramming:Branch andBoundAlgorithmscutting plan algorithm.

DynamicProgramming:Recursivenature of dynamic programming –Forward and Backward Recursion

Deterministic InventoryModels: Static EOQModels–Dynamic EOQmodels.

Game theory:Twoperson ZeroSum Games – Mixed strategy games andtheirAlgorithms.

Books:

1. Introduction toOperationsResearch byHILLIER/LIEBERMAN,TataMcGraw Hill
2.Operations Researchby RPanneerselvan, PrenticeHallofIndia.

CSE2.2.2 DISCRETEMATHEMATICAL STRUCTURES - II Credits: 4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ-Exam:3Hours Univ-ExamMarks:70

Introduction: Relations-Types of relations-Matrixrepresentation of relations-Representationofrelationsasgraphs-Ordering-PartialOrdering – Functions-Composition ofFunctions – Binaryandn-aryOperations – CharacteristicFunctionsof asset -Hashing functions – Recursion-Primitive recursive functions-Recursive functions.

AlgebraicStructures: AlgebraicSystems-Semi groups andMonoids-Grammars and Languages-Polishexpressionandtheircompilation – Groups – Theapplicationofresidue arithmetic to Computers- Group Codes

Lattices: Lattices as Partially Ordered Sets-Properties ofLattices- Sub lattices-Direct Product andHomomorphism's – Isomorphism's – ModularLattices-Distributive lattices- Complimented lattices –Their Properties

Boolean Algebra: Definition – Subalgebra-Direct Product-Homomorphism's –Isomorphism's-BooleanFunctions – RepresentationofBooleanFunctions – Minimizationof Boolean Functions-Design examples of Boolean Algebra

Computability: Introduction-Finite State Machines-Introductory Sequential Circuits – EquivalenceofFiniteStateMachines – FiniteStateAcceptorsandRegularGrammars- Turing Machines and Partial Recursive Functions.

Text Book:

DiscreteMathematicalStructureswithapplicationstocomputersciencebyJ. P. Trembley& R. Manohar Tata McGraw-Hill Publishing Company, New Delhi.

Reference Books:

1) DiscreteandcombinatorialmathematicsbyRalph.G.GrimaldiPearsonEducation, New Delhi
2) ElementsofdiscretemathematicsbyC. L. Liu,TataMcGraw – HillPublishingCompany, New Delhi.

CSE2.2.3 **Microprocessors-I** **Credits:4**

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ-Exam:3Hours Univ-ExamMarks:70

The 8085A µP. Architecture and InstructionSet:
Introduction toMicroprocessors and Microcomputers, InternalArchitecture and Functional/SignalDescriptionof typical 8-bitµP.-8085,InstructionSetand Timing Diagrams of 8085 µP.

Programming the8085µP:
Assembly Language Programming Requirements, Programming Techniques: Looping,Counting, and Indexing,Counterand timingDelays,Stack andSubroutines,CodeConversion, BCDArithmetic, 16-bit dataOperations,Interruptsand InterruptServiceRoutines

The8086µP. Architecture andInstructionSet:
InternalArchitecture andFunctional/Signal Descriptionof8086/8088Segmented Memory, Maximum-Mode and Minimum-Mode Operation,AddressingModes, InstructionSetand Timing Diagrams

Programming the8086µP:
AssemblyLanguageRequirements,DataDefinition,COMand EXEprogramFilesProgramming techniques:LogicalProcessing Arithmetic processingTime DelayLoopsProcedures,Data tables, Modularprogramming, andMacros

TEXTBOOKS:
1. MicroprocessorArchitecture, Programming, and Applications withthe 8085 Ramesh S.Gaonkar, 4th Edition,PenramInternational, 1999
2. The80x86 Family,Design,ProgrammingandInterfacing,John E.Uffenbeck,3rd Edition, PearsonEducationInc.,2002

REFERENCE BOOK:
1. IBM PC Assembler Language andProgramming, PeterAbel, 5th Edition,PearsonEducation Inc.,2001
2. The8088and 8086 Microprocessors,Programming, Interfacing,Software,Hardware and Applications, WaterA.TriebelandAvtarSingh,4thEdition, Pearson Education Inc.,2003nd
3. Microprocessorsand Interfacing,Programming and Hardware, 2 Edition, Douglass V. Hall, TMH Edition, 1999

CSE2.2.4 **COMPUTER ORGANIZATION** **Credits:4**

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ-Exam:3Hours Univ-ExamMarks:70

Register TransferandMicrooperations:
RegisterTransferLanguage,RegisterTransfer,BusandMemoryTransfers,ArithmeticMicro-operations, LogicMicro-operations,ShiftMicro-operations, ArithmeticLogicShift Unit.

Basic Computer OrganizationandDesign:
Instruction Codes,Computer Registers, Computer Instructions, Timing and Control,InstructionCycle,Memory-ReferenceInstructions,Input-OutputandInterrupt,CompleteComputer Description.

Microprogrammed Control:
ControlMemory, Address Sequencing,Micro program Example.

Central ProcessingUnit:
Introduction,GeneralRegisterOrganization,StackOrganization,InstructionFormats,AddressingModes, Data TransferandManipulation, Program Control.

ComputerArithmetic :
Introduction, Addition and Subtraction, Decimal Arithmetic Unit.

Input-OutputOrganization:
Peripheral Devices,Input-OutputInterface,AsynchronousDataTransfer,ModesofTransfer,PriorityInterrupt, Direct Memory Access.

Memory Organization:
MemoryHierarchy,Main Memory,AuxiliaryMemory,Associative Memory,CacheMemory,VirtualMemory.

Text Book:
Computer System Architecture, M.MorrisMano,Third Edition, Pearson Education Inc.,2003

ReferenceBook:
ComputerSystemsOrganizationand Architecture,John D. Carpinelli,Pearson Education Inc., 2003

CSE2.2.5 OBJECTORIENTEDPROGRAMMING LAB Credits:4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ-Exam:3Hours Univ-ExamMarks:70

1. ProceduralParadigms, Object Oriented Paradigm, Conceptof Data Abstraction Encapsulation, Inheritance and Polymorphism
2. Introduction to U.M.L:Description ofvariousU.M.L.Diagrams with examples.

C++

3. **Basics of Object Oriented Programming**:BenefitsofOOP, datatypes, declarations, expressions and operatorprecedence,functions,scope ofvariables
4. **Introductionto OOP**:Classesand objects, Constructors&Destructors,Operator Overloading&type conversions.
5. **Inheritance**:Derived classes,syntax of derived classes, making privatemembers inheritable, single, multilevel,multiple, hierarchical, hybridinheritance
6. **Polymorphism**: Pointers, virtualfunctions andpolymorphism- pointers to objects,thispointer, pointers to derived classes, virtualand purevirtualfunctions.
7. **Templates, Exception handling,consoleI/Oand FileI/O**:Classtemplates,Function templates, member functiontemplates, exception handling,managing console I/Ooperations, working with files.

JAVA

8. **IntroductiontoJAVA**:Introduction,Classesand Objects, Arrays, stringsand Vectors, ExceptionHandling, Managing I/O files in Java.
9. **Packagesand Interface,andMulti-threading:** Packages,Interfaces, creating, extending, stopping, blocking threads, thread states, threadmethods,exceptions,priorityin threads, synchronization, Runnableinterface.

Text Books:

1. JAVA2.0-CompleteReference:HerbertSchildt&F.Naughton.
2. Introduction to JAVA PROGRAMMING byY.Daniel Liang (PHI)
3. Objectoriented Programmingusing C++: E. Balagurusamy, PHI.
4. ProgrammingwithJAVA-Aprimer:E.Balagurusamy,PHI
5. TheUnified Modeling Languagesuser Guideby GradyBoochEtal.(PearsonEducation)

References:

6. Object OrientedProgrammingin C++: N. Barkakati, PHI
7. ObjectOriented Programming through C++ byRobatLaphore.
8. Object Oriented Analysis and Design byAndrew Haigh– (Tata Mc-grawHill.)

CSE2.2.6 **ENVIRONMENTAL STUDIES** **Credits:2**

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ-Exam:3Hours Univ-ExamMarks:70

Module 1: Introduction
Definition, Score and importance, Measuring and defining environmental development: Indicators

Module 2: Ecosystems
Introduction, Types, Characteristic features, Structure and functions of ecosystems, Forest, Grassland, Desert, Aquatic (lakes, rivers and estuaries).

Module 3: Environment and Natural Resources Management
Land Resources : Land as a resource, Common property resources, land degradation, Solerosion and desertification, Effects of modern agriculture, fertilizer-pesticide problems, Forest Resources : Use and over-exploitation, Mining and dams – their effects on forest and tribal people, Water resources : Use and over-utilization of surface and ground water, Floods, Droughts, Water logging and salinity, Dams – benefits and costs, Conflicts over water, Energy Resources : Energy needs, Renewable and non-renewable energy sources, Use of alternate energy resources, Impact of energy use on environment.

Module 4: Bio-Diversity and its Conservation
Value of bio-diversity – Consumptive and productive use, Social, Ethical, Aesthetic and option values, Bio-geographical classification of India – India as a mega diversity habitat, Threats to biodiversity – Hot-sports, habitat loss, poaching of wildlife, loss of species, seeds etc., Conservation of biodiversity – in – situ and ex-situ conservation.

Module 5: Environmental Pollution – Local and Global Issues
Causes, Effects and control measures of : Air pollution, Indoor air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Solid waste management, Compositing, Vermiculture, Urban and industrial wastes, Recycling and re-use, Nature of thermal pollution and nuclear hazards, Global warming, Acid rain, Ozone depletion.

Module 6: Environmental Problems in India
Drinking water, Sanitation and public health, Effect of activities of the quality of environment: Urbanization, Transportation, Industrialization, Green revolution, Water scarcity and ground water depletion, Controversies on major dams – Resettlement and rehabilitation of people problems and concerns, Rain water harvesting, Cloud seeding and watershed management.

Module 7: Economy and Environment
The economy and environment interaction, Economics of development, Preservation and conservation, Sustainability: Theory and practice, Limits to growth, Equitable use of resources for sustainable lifestyles, Environmental impact assessment.

Module 8: Social Issues and the Environment
Population growth and environment, Environmental education, Environmental movements, Environment Vs development.

Module 9: Institutions and Governance
Regulation by Government, Monitoring and enforcement of environmental regulation, Environmental acts: Water (Prevention and control of pollution) act, air (Prevention and control of pollution) act, Environmental Protection Act, Wild life protection act, Forest conservation act, Costal zone regulations, Institutions and policies relating to India, Environmental Governance.

Module 10: International Conventions
Stockholm Conference 1972, Earth Summit 1992, World Commission for Environmental Development (WCED).

Module 11: Case Studies
Chipko movement, Narmada bachao andolan, Silent valley project, Madhura refinery and Taj Majal, Industrialization of pattancheru, Nuclear reactor at Nagarjuna Sager, Tehri Dam, Ralegaon Siddhi (Anna Hazare), Kolleru lake – Acquaculture, Florosis in Andhra Pradesh.

Module 12: Field Work
Visit to a local area to document and mapping environmental assets – River / forest / grassland / hill / mountain, Study of local environment – Common plants, Insects, Birds, Study of simple ecosystems – Pond, river, hill, slopes etc. Visits to industries, Water treatment plants, Affluent treatment plants.

Textbooks: Kaushik – Kaushik, Anubha

Reference: Deswal & Deswal, Raja Gopal, Dharmaraj Publishers.

CSE2.2.7 **MICROPROCESSORS-ILAB** **Credits:2**

Lab:3Periods/week SessionalMarks:50
Univ. Exam:3Hours Univ. ExamMarks:50

DigitalLogic DesignExperiments:

1. TTLCharacteristicsandTTLIC Gates
2. Multiplexers&Decoders
3. Flip-Flops
4. Counters
5. ShiftRegisters
6. BinaryAdders&Subtractors
7. ALU

Assembly LanguageProgramming:

1. 8085 Assembly LanguageProgramming according to theory course microprocessors-Iusingthe following trainers:

   KeyboardMonitorof8085µP Trainer
   SerialMonitorof8085µPTrainer with Terminal
   8085 LineAssembler of 8085µPTrainer with PCasTerminal
   8085 Cross Assembler using In-Circuit Emulator (ICE) with 8085µP Trainer and PC as Terminal

2. 8086 Assembly LanguageProgramming according to theory course Microprocessor-Iusingthe following:
   PC Assemblerusing TASMor MASM, TD or SYMDEBor CVD(Code View debugger)

Graded Problemsaretobe used accordingto the syllabusofMICROPROCESSORS-I

CSE 2.2.8 OBJECT ORIENTED PROGRAMMING LAB Credits:2

Lab: 3 periods/week SessionalMarks:50
Univ.Exam: 3 hours. Univ. Exam marks: 50

C++

1.Program that implements stack operations using classesand objects.
2.Program performing complex number additionusing friend functions.
3.Program for complex number addition using operator overloading.
4.Program to performstring operationsby overloading operators.
5.Program on hierarchical inheritance showingpublic,private and protected inheritances.
6.Program for computation of students result using hybrid inheritance.
7.Program implementing bubble-sort using templates.
8.Program on virtual functions.
9.Program for handling PushonFull andPoponEmpty Exceptions for a Stack.
10.Program for copying one file to another file using streams.
11.Program for writing and reading a class object to a file.

JAVA

1.Program on packages.
2. Write a program to copycontents of a file into another file usingFile streams.
3.Program on hierarchical inheritance.
4.Program for handling ArrayIndexoutofBoundsException and Divide-by-zero Exception.
5.Program for customexception creation.
6.Program on multi-threading showing how CPUtime is shared among all the threads.
7.Program for Producer-Consumer problem using threads.
8. Program for BannerApplet.
9. Program for implementing a Calculator.
10. Program for implementing mouse events, (drawing lines, curves using mouse etc.)
11.Program on JDBC connectivity where database isOracle.
12. Program to send messages across two machines using simple sockets.

CSE2.2.9 Human Values & Professional Ethics Credits:2

Instruction: 2Periods SessionalMarks:100

Pass. Mark: 40

UNIT-I: Ethical Theories

- Basic Moral Theories: i) Beneficence: doing good to others
  ii) Non-violence or peace
  iii) Justice

UNIT-II

- Classification of Ethical Theories:
  i) Consequentialism–Mill's utilitarianism-greatest happiness to greatest number of people.
  ii) Deontology-Kantianism-Actions must satisfy the categorical imperative.
  iii) Virtue theory-Aristotelianism virtue is a mean between two extremes of action or passion.

UNIT-III

- Rights & Responsibilities of a citizen:
  i) Fundamental duties as stipulated in the constitution of India.
  ii) The rights to individuals guaranteed by Indian constitution.
  iii) (a) Rights of a professional
  (b) Professional responsibilities.

UNIT-IV

- Human Values & Attitudes:
  i) Classification of Values
  ii) Analysis of desirable values
  iii) The importance of attitudes in personal & Professional lives.

UNIT-V

- Ethical Living: i) Maslow's theory of Hierarchy of needs.
  ii) Clayton Alderfer's ERG (Existence, Relatedness and Growth) theory.
  iii) Concept of harmony in life.

Reference Book: Subramanian R. 2013, Professional Ethics, New Delhi: Oxford

B.TECH. (CSE) 3rd YEAR I-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessional	Total	
CSE 3.1.1	MICROPROCESSOR-II	3	1	--	70	30	100	4
CSE 3.1.2	SYSTEM PROGRAMMING	3	1	--	70	30	100	4
CSE 3.1.3	ELECTIVE – I	3	1	--	70	30	100	4
CSE 3.1.4	FORMAL LANGUAGES & AUTOMATA THEORY	3	1	--	70	30	100	4
CSE 3.1.5	FILE STRUCTURES	3	1	--	70	30	100	4
CSE 3.1.6	OPERATING SYSTEMS	3	1	--	70	30	100	4
FE01	FREE ELECTIVE-I	3	1	--	70	30	100	4
CSE 3.1.7	OPERATING SYSTEMS LAB.	--	--	3	50	50	100	2
CSE 3.1.8	MICROPROCESSOR-II LAB	--	--	3	50	50	100	2
CSE 3.1.9	SOFT SKILLS LAB.	--	--	3		100	100	1
						TOTAL CREDITS		**33**

ELECTIVE-I

[1]. COMPUTER GRAPHICS
[2]. DIGITAL SIGNAL PROCESSING
[3]. FAULT TOLERANT COMPUPTING
[4]. COMBINATORICS & GRAPH THEORY.

CSE 3.1.1 **MICROPROCESSORS - II** **Credits:4**

Instruction:3Periods&1Tut/Week SessionalMarks:30
Univ.Exam:3Hours Univ.ExamMarks:70

InterfacingSemiconductor Memories:
Semiconductor Memories: Classification,InternalOrganisation& FunctionalDescription.Interfacing SRAMs,andEPROMs to8085/8086

Interfacing I/O Devices:
InterfacingCharacteristicsofI/ODevices,I/O Deviceaddressingmethods, I/O DeviceProgrammingMethods.

Interfacing PeripheralICsto Intel8085/8086:
ParallelI/OInterface- 8255,SerialI/OInterface – 8251, Timer Interface - 8253, Keyboard/DisplayInterface-8279,InterruptControllerInterface-8259

Interfacing DataConverters to8085/8086:
D/A Conversion Methods,A/D Conversionmethods, Interfacing DAC,Interfacing ADC.

Introductionto Micro controllers:
Intel 8051Architecture and Programming

Introduction to HardwareandSoftwareofPCs:
Hardware Organization,DOSInternals,ROMBIOSand BIOS Function Calls, DOSFunction Calls, Introduction toPentiumProcessors

TEXT BOOKS:
1. MicroprocessorArchitecture, Programming, andApplications with the8085RameshS. Gaonkar, 4th Edition, PenramInternational,1999.
2. The80x86 Family, Design,Programming andInterfacing,John E.Uffenbeck,3rd Edition,PearsonEducationInc., 2002
3.KennethJ.Ayala,8051Microcontrollerarchitecture,programming andapplications,2nd Edition,PenramInternationalPublications,1999

REFERENCEBOOKS:
1. BARRY B. BREY, The Intel Microprocessors 8086/8088,80186/80188,80286,80386 and80486, Pentium, PentiumPro Processor, Pentium II, Pentium III,Pentium 4, Architecture, Programming and Interfacing,6th Edition, Pearson Education Inc.,2003
2 Walter A. Tribel and Avtar Singh, The8088 and 8086 Microprocessors, Programming, interfacing, Software, Hardware, and Applications, 4th Edition, Pearson Education Inc., 2003
3.MicroprocessorsandInterfacing, Programming and Hardware, 2nd Edition, Douglass V. Hall, TMH Edition, 1999
4. Sanjay KBose, Hardware and Softwareof Personal Computers, New Age International (P) Ltd., 1991
5. MykePredko, Programming and Customizing the 8051 Microcontroller, TMH, 1999

CSE3.1.2 **SYSTEMS PROGRAMMING** **Credits:4**

Instruction:3Periods&1Tut/Week SessionalMarks:30
Univ.Exam:3Hours Univ.ExamMarks:70

Introduction to Systems Programming, Introduction to Assembly Language Programming-IntroductiontoInstructionFormats, Dataformats –Roleof Base Register, IndexRegister.

Introduction toAssembler,databasesused in assembler design,Design ofAssembler-SinglePass&DoublePass.

Introduction toMacros,various typesof Macros,Design ofMacroProcessor–SinglePass&DoublePass. Introduction to Loaders,functionsof aloader,typesof Loaders,databases used in Loaders,Design of Loaders -Absolute & DLL.

Introduction to Software Tools, Text editors, Interpreters, Program Generators, DebugMonitors.

TextBook: Systems Programming byDonovanTataMcGrawHill

Reference: System Programming byDhamdhereTataMcGrawHill,IIndRevised Edition

CSE 3.1.3 **ELECTIVE-I(1) COMPUTERGRAPHICS** **Credits:4**

Instruction:3Periods&1Tut/Week SessionalMarks:30
Univ.Exam:3Hours Univ.ExamMarks:70

Introduction: Usage of Graphics and their applications, PresentationGraphics- Computer Aided Design- Computer Art- Entertainment- Education and Training – Visualization- Image Processing-GraphicalUserInterfaces

OverviewofGraphicssystems: VideoDisplayDevices – RasterScansystems-random scan systems – Graphicsmonitors and workstations-Input devices-hard copy devices- Graphics software.

Outputprimitives: PointsandLines – LineDrawingAlgorithms– LoadingtheFrame buffer – Linefunction-Circle–GeneratingAlgorithms – EllipseGeneratingAlgorithms – OtherCurves – ParallelCurveAlgorithms – CurveFunctions – PixelAddressing – FilledArea Primitives-Filled Area Functions- Cell Array- Character Generation

Attributes of Output Primitives: Line and Curve Attributes-Color and Gray scale levels – AreaFillAttributes–CharacterAttributes – BundledAttributes – InquiryFunctions – Antialiasing.

Two Dimensional Geometric Transformations: Basic Transformations- Matrix Representations-Homogeneous Coordinates – CompositeTransformations-Other Transformations – TransformationsbetweenCoordinateSystems – AffineTransformations- Transformation Functions- Raster methods for Transformations

Two Dimensional Viewing: The viewingPipeline-Viewing Coordinate Reference Frame – Window – to – Viewport Coordinate Transformation-Two Dimensional Viewing Functions-Clipping Operations-Point Clipping-Line Clipping-Polygon Clipping-Curve Clipping- Text and Exterior Clipping

Structure And Hierarchical Modeling: Concepts of Structures and Basicmodels- Editing-HierarchicalModelingwithStructures – GUIandInteractiveInputMethods- Windows and Icons- Virtual RealityEnvironments

ThreeDimensionalConceptsandObjectrepresentations:3Ddisplaymethods-3D Graphics-Polygon Surfaces-Curved Lines and Surfaces- Quadratic Surfaces – Super Quadrics – BlobbyObjects-SplineRepresentations – CubicSplinemethods – BézierCurves andSurfaces – BsplineCurvesandSurfaces

Three Dimensional Geometric and Modeling Transformations: Translation – Rotation-scaling-OtherTransformations – CompositeTransformations-3DTransformation Functions – ModelingandCoordinate Transformations.

Three Dimensional Viewing: Viewing Pipeline- Viewing Coordinates – Projections – View Volumes-General ProjectionTransformations – Clipping-Hardware Implementations – ThreeDimensionalViewing

Chapters 1 to 12 except 10-9 to 10-22 of the Text book

TextBook: Computer GraphicsC Version by Donald Hearn& M.Pauline BakerPearsonEducation,NewDelhi,2004

ReferenceBooks:

1) ProceduralElementsforComputerGraphicsbyDavidF.Rogers,TataMcGrawHillBook Company, New Delhi, 2003.
2) ComputerGraphics:Principles&Practice inCbyJ.D.Foley,S.KFeiner,AVanDamF.HJohn,PearsonEducation,2004
3) Computer Graphics using Open GL by FranscisSHillJrPearsonEducation,2004.

CSE 3.1.3 ELECTIVE-I (2) DIGITAL SIGNAL PROCESSING Credits:4

Instruction:3Periods&1Tut/Week SessionalMarks:30
Univ.Exam:3Hours Univ.ExamMarks:70

AnOverviewofDigitalSignalProcessing anditsApplications

Introduction to Programmable DSPs

ArchitectureofTMS320C3X

Addressing Modes and AssemblylanguageInstructionsof 'C3X

ApplicationPrograms in C3X

AnOverview of TMS320C54X

TMS320C54X Assemblylanguage Instructions

ApplicationProgramsin C54X FPGA–based

DSP SystemDesign

Text Book:

Digital SignalProcessors,Architecture,Programming andApplications,B.Venkataramani,M.Bhaskar,TMH,2002

Reference Books:

1. DigitalSignalProcessing,A PracticalApproach,EmmanuelC.IFeachor,Barrie W. Jervis, 2nd Edition, PearsonEducation,Inc.,2002
2. DigitalSignalProcessing,SteveWhite,Thomson DelmarPublications,2000
3. DigitalSignalProcessing, Acomputer Based Approach,SnajitK. Mitra, 2nd Edition, TMH, 2001

CSE 3.1.3 ELECTIVE-I(3) FAULT TOLERANT COMPUTING Credits:4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3Hours Univ.ExamMarks:70

Basic Concepts of Reliability
Faults in Digital Circuits
Test Generation

Introduction toFaultTolerantDesignofDigitalSystems: Fault Tolerance, Static redundancy, Dynamic redundancy,Faulttolerant designof Memory systems, Practical FaultTolerant Systems: FTMP, ESS, COMTRAC

Introduction toSelf-CheckingLogic:Thetwo railChecker,Design forTestability:Testability,Controllabilityand Observability,DesignoftestableCombinational LogicCircuits,Testabledesign ofSequentialCircuits,Thescan path technique, Designingtestabilityinto logicboards

TextBooks:
FaultTolerantandFaultTestableHardware Design, ParagK.Lala, PHI, 1985

Reference:
1. FaultTolerantComputing Theoryand Techniques-Volume I, D.K. Pradhan,PHI,1986
2. Testing ofDigital Systems, Nirajjha and SandeepGupta,CambridgeUniversityPress,2003

CSE 3.1.3 ELECTIVE-I (4) COMBINATORICS &GRAPHTHEORY Credits:4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3Hours Univ. ExamMarks:70

PART I: COMBINATORICS

1. **FOUNDATION:**Basics – Sets – Relations– Proof. Methods– Problem-solving strategies – MathematicalInduction.
2. **COMINATORICS:**Basics of counting-Combinations and Permutations-Enumeration of Combinations&Permutations without repetitionsandwithoutrepetitions- with constrained repetitions-BinomialCoefficients – BinomialandMultinomialtheorems-Principle ofInclusion- Exclusion
3. **RECURRENCERELATIONS:**Generating Functions ofSequences– CalculatingCoefficientsof GeneratingFunctions – RecurrenceRelations – SolvingRecurrenceRelations usingSubstitutionand GeneratingFunctions– Method ofCharacteristicRoots-Solutions ofhomogeneousand inhomogeneous recurrence relations.

PART II: GRAPH THEORY

4. **FUNDAMENTAL CONCEPTS:**Whatis a Graph-Paths-Cycles-Trails-Vertex Degreesand Counting-Directed Graphs-Trees and Distance-SpanningTrees – Enumeration – Optimizationand Trees.
5. **MATCHINGSANDCONNECTIVITY:**Matching'sandCovers-Algorithmsandapplicationsof matching – MatchingsinGeneralgraphs– CutsandConnectivity– k – connectedgraphs-Networkflow problems.
6. **COLORING AND PLANAR GRAPHS:**Vertexcoloringandupperbounds – Structureof k- chromatic Graphs-Enumerative Aspects-Embeddings and Euler'sformula – Characterizationof Planar graphs-Parameters of Planarity – EdgesandCycles – LineGraphsandedge-coloring- Hamiltonian Cycles – Planarity-coloring and cycles.

TEXTBOOKS:

1. J.L.Mott,AbrahamKandel&TheodoreP.Baker,"DiscretemathematicsforComputerScientists&Mathematics",Prentice – HallofIndia Ltd. NewDelhi.(Chapters1,2,3)
2. DouglasB.West,"Introduction toGraphTheory",Pearson EducationAsia,NewDelhi(Chapters1,2,3,4,5,6,7)

REFFERENCEBOOKS:

1. MichelTownsend"DiscreteMathematics:Applied Combinatoricsandgraph theory",Benjamin/Cummings PublishingCompany", California.
2. KennethHRosen."DiscreteMathematicsand ItsApplications,TataMcGraw HillPublishingCompany, NewDelhi.
3. Robin J.Wilson, "Introduction toGraph Theory"PearsonEducation Asia,NewDelhi.

CSE 3.1.4 FORMAL LANGUAGESANDAUTOMATA THEORY Credits: 4

Instruction:3Periods&1Tut/Week SessionalMarks:30
Univ. Exam:3Hours Univ. ExamMarks:70

1. Finite Automata andRegular Expressions:
BasicConcepts ofFiniteStateSystems,DeterministicandNon-DeterministicFinite Automata,FiniteAutomatawith -moves,RegularExpressions,MinimizationofFinite Automata,Mealy andMoore Machines, Two-Way Finite Automate.

2. Regular sets&Regular Grammars:
Basic Definitions of Formal Languages andGrammars,RegularSetsandRegular Grammars, Closure Properties of Regular Sets, Pumping Lemma for Regular Sets, Decision Algorithm for Regular Sets, Myhill – Nerode Theorem, Minimization of Finite Automata.

3. Context FreeGrammarsandLanguages:
ContextFreeGrammarsandLanguages,DerivationTrees,Simplification ofContext FreeGrammars,NormalForms,PumpingLemmaforCFL,closurepropertiesofCFL's, DecisionAlgorithm for CFL.

4. Push down Automataand Deterministic CFL:
Informal Description, Definitions, Push-Down Automata and Context free Languages, ParsingandPush-DownAutomata.

5. Universal Turing Machines and Undecidability:
Designand TechniquesforConstruction ofTuringMachines,UndecidabilityofPCP. ChomskyHierarchy,RegularGrammars,UnrestrictedGrammars,ContextSensitive languages,Relationshipbetween classesof languages.

TEXTBOOKS:
Introduction toAutomataTheory, Languages&ComputationbyJ.E.Hopcraft&Jeffery D.Ulman–Narosa Publishing Company.

REFERENCE BOOKS:
Theory of Computer SciencebyMishra&Chandra
Sekharan, PHI.
An Introduction to Formal Languages and Automata,3e By Peter Linz – Narosa Publishing House.

CSE 3.1.5 **FILE STRUCTURES** **Credits:4**

Instruction:3Periods&1Tut/Week SessionalMarks:30
Univ.Exam:3Hours Univ.ExamMarks:70

FileProcessingOperations
Physicalandlogicalfiles,opening,reading&writingandclosingfilesinC,seekingandspecialcharacters infiles, physicaldevicesand logicalfiles,file – related headerfilesin C

SecondaryStorage
Disks–organization,tracks,sectors,blocks,capacity,non – dataoverhead,costofadiskaccess,MagneticTape–types,performance,organizationestimationoftapelengthand datatransmissiontimes,diskvstape,CD-ROM–CD-ROM asafilestructure,physicalorganization,strengthsandweaknessofcd-roms, storage hierarchy

Byte Journeyandbuffer Management
Filemanager,I/O buffer, I/O processing, buffer strategies and bottlenecks

File Structure Concepts
Astreamfile,fieldstructures,readingastreamoffields,recordstructuresandthatusesalength indicator, Mixingnumbers and characters–useof ahexdump,reading the variablelengthrecords fromthe files

Managing recordsinCfiles
Retrievingrecordsbykeys,sequentialsearch,directaccess,choosingarecordstructureandrecordlength, header records,fileaccessandfileorganization

Organizing files for performance
Data compression, reclaimingspace – record deletion and storagecompaction, deleting fixed-length records for reclaiming space dynamically, deleting variable-length records,space fragmentation, replacementstrategies.

Indexing
Index,Asimpleindexwithanentrysequencedfile,basicoperationsonanindexed,entrysequencedfile, indexesthataretoolargetoholdinmemory,indexingtoprovideaccessbymultiplekeys,retrievalusing combinationof secondarykeys, improvingthe secondaryindex structure –invertedlists

Indexed sequentialfile access and prefix B^+Trees
Indexedsequentialaccess,maintaininga sequenceset, addingasimpleindextothesequenceset,thetree,simple prefix Bcontent oftheindex: separatorsinstead of keys,the simple prefix Btreemaintenance,indexsetblocksize,internalsetblocksize,and internalstructureofindexsetblocks:avariable B^+trerderB-tree,loading asimpleprefix

<u>Special Note</u>: **Implementation in C only**

Hashing
Collisionsin hashing,asimplehashingalgorithms,hashingfunctionsand recorddistributions,memory requirements, collision resolutionby progressive overflow, buckets, deletions

Extendablehashing
Working of extendable hashing, implementation, deletion,extendablehashing performance

Designing file structure for CD-ROM
Treestructure onCD-ROM, hashingfiles on CD-ROM, CD-ROM file structure

TextBook: FileStructures–AnObjectOrientedApproachwithC^{++}byMichaelJ.Folk,BillZoellick andGreg Riccardi, Pearson

CSE 3.1.6 **OPERATING SYSTEMS** **Credits:4**

Instruction:3Periods& 1Week/Week SessionalMarks:30
Univ. Exam: 3Hours Univ. ExamMarks:70

Introduction:What ISOS; Historyof Operating Systems, Operating System Concepts, OperatingSystems Structure

Processes: Introductionto Processes, InterProcessorCommunication,Classical IPCProblems, ProcessScheduling

MemoryManagement:MemoryManagementwithoutSwappingorPaging,Swapping, VirtualMemory,PageReplacementAlgorithms,Modelingpagingalgorithms,Design issues for paging systems, Segmentation

FileSystemsAndInput/Output: Files, Directories, File system implementation, Security, Protection mechanism, PrinciplesofI/OSoftware,DiskManagement

Deadlocks:Resources,Deadlocks,The OpticalAlgorithm,DeadlockDetectionandRecovery,DeadlockAvoidance,DeadlockPrevention,OtherIssues

CaseStudy: Unix:FundamentalConceptsinUnix,MS–DOS:FundamentalConcepts inMS-DOS

Text Book: Modern Operating Systems byAndrew S. Tanenbaum

Reference: Applied Operating SystemsConceptsbyAviSilberschatz,PeterGalvin,GreyGagne

FE01 (FREE ELECTIVE) DATASTRUCTURES CREDITS: 4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3Hours Univ. Exam. Marks:70

IntroductiontoDataStructures: Introduction, Data Information, Overview of Data Structures, Types of Data Structures, Primitive and Non-primitive Data Structures and operations, Binary and Decimal Integers, Logical Information, Storage Information, Hardware and Software, Concepts of Data Types, Data Types in c, Abstract Data Types, Pointers, Structures in C, Unions, Algorithms.

Recursion:Introduction to function, Types of Recursion, Rules for Recursive Function, Direct Recursion, Indirect Recursion, Recursion vs. Iterations, The Towers of Hanoi, Advantages and Disadvantages of Recursion, Tail Recursion, Recursion Efficiency .

Stack and Queues:Introduction, Stack-related terms, Stack Implementation, Operation on stacks, Pointers and stack, Introduction to Queues, various positions of Queues, Queue Implementation, Operation on Queues, Disadvantages of Simple Queues, Dynamic implementation (Pointers), Insertion and Deletion of Queues, Application of Queues.

Linked Lists:Introduction, Implementation of List, Traversal of List, Searching and Retrieving an Element, Predecessor and Successor, Insertion, Deletion. Sorting, Merging List, Linked List, Memory Allocation and De-allocation, Operations on Linked Lists, Single Linked List, Linked List with Header, Linked List without Header, Insertion in the Linked List, Insertion of Node at Start, Insertion of Node at End, Insertion of Node at Given Position, Reversing the Single Linked List, Concatenation of Two Lists, Splitting of Linked List, Circular Linked List, Method for Detecting and Double Linked List, Circular Double Linked List, Application of Linked List.

Trees:Introduction, Basic terms, Binary trees, Extended Binary tree, Binary trees Representation, Operation on Binary Tree, Traversal of Binary Tree, Binary Search tree.

Sorting:Introduction, Sorting and Insertion sort, Selection Sort, Bubble Sort, Quick Sort, Tree Sort, Merging List, Heap Sort, Radix Sort and Partition Exchange Sort.

Searching: Introduction, Searching, Linear (Sequential) Search, Binary Search, Hashing Method, Hashing Function, Division Method, Mid-Square Method, Folding Method, Length -Dependent Method, Multiplicative Hashing Function, Digit Analysis Method.

Graph:Introduction, Terminology, Graph Representation, Traversal in Graph (Breadth first and Depth searches), Spanning Trees, Prim' algorithm.

Textbooks:

Introduction to Data Structures in C by Ashok N. Kamthane, Pearson Education.

Reference Books:

1. Data Structures using C by Amiya Kumar Rath and Ashok Kumar Jagdev, SciTech Publications.
2. DataStructures UsingCand C++YiddishLangsam, MosheJ.AugensteinandAaronM. Tanenbaum, Prentice HallOf India (2nd Edition).

Note:All Implementation are Using C Language only.

CSE 3.1.7 **OPERATING SYSTEMS LAB** **Credits:2**

Lab: 3 periods/week SessionalMarks:50
Univ. Exam: 3 hours. Univ. Exam marks: 50

1. Studyoflaboratoryenvironment:

Hardware specifications,software specifications

2. Simple Unix-C programs:
   Programsusingsystemcalls,libraryfunctioncallstodisplayandwritestringson standard output device and files.
3. Programs using fork system calls.
2. Programs for error reportingusingerrno,perror()function.
3. Programs using pipes.
4. Shellprogramming.
5. Programs to simulate process scheduling likeFCFS,ShortestJobFirstandRound Robin.
6. ProgramstosimulatepagereplacementalgorithmslikeFIFO,OptimalandLRU.
7. Programs to simulate free space management.
8. Programs to simulate virtual memory.
10. Programs to simulate deadlock detection.

References:

Unix concepts and applications by Sumitabha Das, TMH Publications. Unix programming by Stevens, Pearson Education.

Shell programming by YashwanthKanetkar.

Operating SystemConcepts bySilberschatz, and Peter Galvin.

CSE 3.1.8 **MICROPROCESSOR-IILAB** **Credits:2**

Lab: 3 Periods/week SessionalMarks:50
Univ. Exam: 3 Hours Univ. ExamMarks:50

INTERFACINGWITH8085TRAINER

1.1 MemoryInterface (Interfacing SRAMandEPROM)
1.2 Toggle SwitchKeyboard AndLeddisPlay Interface
1.3 HexKeyboard AndDotMatrix Hex LEDDisplay Interface
1.4 ASCIIKeyboardInterface
1.5 Push Button Keyboard Matrix (8x3) Interfacewith8085 Ice
1.6 8279-Programmable Keyboard/Display Interface
1.7 CRTTerminalInterface

INTERFACINGWITHPC

2.1 SteeperMotorController
2.2 DAC/ADC Interface
2.3 8253 TimerInterface
2.4 Multiplexed Dot Matrix Hex LEDs Interface
2.5 40-COL./80COL.D.M. Printer Interface
2.6 8051 ProgrammingExercises
2.7 TrafficLightControllerInterface

CSE3.1.9 **SOFTSKILLSLAB** **Credits:2**

Lab: 3 Periods/week SessionalMarks:50
Univ. Exam:3Hours Univ. Exam. Marks:50

Communication:
Importance of communication
Non verbal communication
Personal appearance
Posture
Gestures
Facial expressions
Eye contact
Space distancing

Goal setting:
Immediate, short term, long term,
Smart goals, strategies to achieve goals

Time management:
Types of time
Identifying time wasters
Time management skills

Leadership and team management:
Qualities of a good leader
Leadership styles
Decision making
Problem solving
Negotiation skills

Group discussions:
Purpose (Intellectual ability, creativity, approach to a problem, solving, tolerance, qualities of a leader)
Group behaviour, Analysing performance

Job interviews:
Identifying job openings
Preparing resumes & CV
Covering letter
Interview (Opening, body-answer Q, close-ask Q),
Types of questions

Reference books:

1. 'Effective Technical Communications' by Rizvi M. Ashraf, McGraw–Hill Publication
2. 'Developing Communication Skills' by Mohan Krishna &MeeraBanerji, Macmillan
3. 'Creative English for Communication' by N.Krishnaswami&T.Sriraman, Macmillan
4. 'Professional Communication Skills' by Jain Alok, Pravin S.R. Bhatia & A.M. Sheikh,S.Chand& Co.

B.TECH. (CSE) 3rd YEAR II-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessionals	Total	
CSE 3.2.1	COMPILER DESIGN	3	1	--	70	30	100	4
CSE 3.2.2	DESIGN & ANALYSIS OF ALGORITHMS	3	1	--	70	30	100	4
CSE 3.2.3	DATA BASE MANAGEMENT SYSTEMS	3	1	--	70	30	100	4
CSE 3.2.4	DATA COMMUNICATIONS	3	1	--	70	30	100	4
CSE 3.2.5	ELECTIVE – II	3	1	--	70	30	100	4
CSE 3.2.6	COMPUTER ARCHITECTURE	3	1	--	70	30	100	4
CSE 3.2.7	**FILE STRUCTURES LAB.**	--	--	3	50	50	100	2
CSE 3.2.8	DBMS LAB.	--	--	3	50	50	100	2
							TOTAL CREDITS	28

ELECTIVE - II

[1] PRINCIPLES OF PROGRAMMING LANGUAGE
[2] BIO-INFORMATICS
[3] IMAGE PROCESSING
[4] VHDL

* The industrial training will be for three weeks during the summer after third year second semester.

CSE 3.2.1 **COMPILER DESIGN** **Credits:4**

Instruction:3Periods&1Week./Week SessionalMarks:30
Univ. Exam: 3Hours Univ. ExamMarks:70

TheTheory ofAutomata:Definitionand description, Transitionsystems, properties, Acceptability of string,NDFA,Equivalencein betweenDFA&NDFA.Grammars, TypesofGrammars,Grammars and Automata,Regularexpressions,FiniteAutomataand Regularexpressions,RegularsetsandRegular Grammars.

Overallview ofCompilers: Brief discussion on various phases of Compilers.

Designof lexical analyzer.

Designof Parsers:ShiftReduce parser,OperatorPrecedenceParser,Predictive Parser,LR parser, SLRParser, LALRparser

Syntax Directed Translation:Syntax directed translationandimplementation, Intermediatecode,Postfix notation, parsingtree,three address Code,Quadruples,Triples.

IntermediateCode Optimization: The principle sources of optimization, Loop Optimization, DAG, Global dataflow analysis.

CodeGeneration:Problems,Machinemodel,Asimplecode generator,Registerallocation and assignment, Code generation from DAG, Peep hole optimization.

Brief discussionon symboltables, Run-time storage administration.

Chapters:1,2,3,4,5,6,7,9,10,11,12,15of the textbook.

Text Book
Principlesof Compiler Design byAho,D. Ullman
Reference Books:
Compiler Construction by Kenneth. C. Louden, Vikas Pub.House

CSE 3.2.2 DESIGN AND ANALYSIS OF ALGORITHMS Credits:4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3Hours UnivExamMarks:70

Introduction–Fundamentalsofalgorithmicproblemsolving–importantproblemtypes–fundamentaldatastructures.

Fundamentals of analysis of algorithms and efficiency– Analysis framework –Asymptotic NotationsandBasicEfficiencyclasses–MathematicalAnalysisofNon – recursiveAlgorithms– MathematicalAnalysisofrecursiveAlgorithms–EmpiricalAnalysisofAlgorithms–Algorithm Visualization BruteForce–SelectionSortandBubblesort–SequentialSearchandBrute–ForceStringMatching –Closest Pairand Convex – HullProblems by Brute Force – Exhaustive Search

Divide – and – Conquer–Mergesort–Quicksort–BinarySearch–BinaryTreeTraversalsand Related Properties – Multiplication of large integers and Strassen'sMatrixMultiplication – Closest- PairConvex – HullProblems byDivide- and – Conquer

Decrease–and–Conquer–InsertionSort–Depth – FirstSearchandBreadth – FirstSearch – TopologicalSorting– AlgorithmsforGeneratingCombinatorialObjects–Decrease – by – a – Constant – Factor Algorithms – Variable – Size-Decrease Algorithms

Transform – and – Conquer–Presorting–GaussianElimination–BalancedSearchTrees–Heaps and Heap sort – Horner's Rule and Binary Exponentiation – ProblemReduction

SpaceandTimeTradeoffs–SortingbyCounting–InputEnhancementinstringMatching– Hashing–B-Trees

DynamicProgramming–ComputingaBinomialCoefficient–Warshall'sandFloyd'sAlgorithm– Optimal Binary SearchTrees - The Knapsack Problem and Memory Functions.

Greedy Technique–Prim's Algorithm – Kruskal's Algorithm – Dijkstra'sAlgorithm – Huffman Trees LimitationsofAlgorithmPower–Lower – BoundArguments–DecisionTrees–P,NPandNP–complete problems – Challenges of Numerical Algorithms

CopingwiththeLimitationsofAlgorithmsPower–Backtracking–Branch – and – Bound– Approximation Algorithms for NP-hard Problems –Algorithms for solving Non-linear Equations.

TextBook:

IntroductiontoDesign&AnalysisofAlgorithmsbyAnanyLevitin,PearsonEducation,NewDelhi, 2003

ReferenceBooks:

1. IntroductiontoAlgorithmsby ThomasH.Corman,CharlesE.Leiserson,RonaldR.Rivest& Clifford Stein, PrenticeHallofIndia,NewDelhi
2. The Design and Analysis of computer Algorithms,Aho,Hop croft&Ullman, Pearson Education,NewDelhi, 2003
3. Fundamentalsofalgorithmics,GillesBrassard&PaulBratley,PrenticeHallofIndia,New Delhi

CSE3.2.3 DATABASEMANAGEMENTSYSTEMS Credits:4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ. Exam: 3 Hours Univ Exam Marks:70

IntroductiontoDBMS:Overview,FilesystemvsDBMS,AdvantagesofDBMS,Storagedata,queries, TransactionManagement, DBMS structure

E-Rmodel:Entities,AttributesandEntitysets,RelationshipandRelationshipsets,FeaturesofERmodel, Conceptual database design with ERmodel

Relationalmodel:Integrity constraintsoverrelationsandenforcement,Queryingrelationdata,Logical database design,views,destroying/altering tables and views

RelationalLanguages: Algebraand calculus

SQL:Basic SQL,Query,union,interest,except,NestedQueries,AggregatedOperation,Nullvalues, EmbeddedSQL, cursors,ODBC andJDBC, Triggers andActivedatabase, designing active databases

Schema refinement andnormalforms:Schemarefinement,fds,reasoning normalforms,normalization up to3rd &BCnormal forms, lossless join & dependencypreserving decomposition

Transactionmanagement: Transaction concept,transactions andschedules,concurrent executionof transactions,lock – based concurrencycontrol, crashrecovery

Concurrencycontrol:Lockmanagement,specializedlockingtechniques,concurrencycontrolwithout locking

CrashRecovery:Aries,recoveringfrom a system crash, media recovery

Text Book:
DatabaseManagementSystems byRaghuRamakrishnan and Johannes Gehrke, McGraw-Hill

CSE 3.2.4 **DATA COMMUNICATIONS** **Credits:4**

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3 Hours Univ. Exam Marks:70

1. An Introduction to DataCommunications:
A CommunicationsModel, DataCommunications and DataCommunicationsNetworking,Protocols and Protocol Architecture, Characteristics ofData Transmission: Concepts andTerminology,Analog andDigital DataTransmission, TransmissionImpairments

2. Transmission Media:
Guided Transmission Media,Wireless Transmission DataEncoding,DigitalData,DigitalSignals,DigitalData, Analog Signals, Analog Data, Digital Signals, Analog Data, Analog Signals

3. TheDataCommunicationInterface:
Asynchronous andSynchronousTransmission,LineConfigurations,Interfacing.DataLinkControlFlowControl,ErrorDetection, ErrorControl,High– LevelDataLink Control (HDLC),Other Data LinkControl Protocols.

4. **DataCommunications Hardware:Terminals**
Introduction,Basic TerminalComponents,Enhanced TerminalComponents,General – PurposeTerminals, RemoteJobEntryTerminals,TransactionTerminals,Clustering of Terminal Devices.Communications Processing Hardware Introduction,SwitchingProcessors,MultidropLines,Multiplexers,Concentrators, Front-End Processors.

5. Modems:
NetworkAttachmentand Regulations,LineConditioning andLeased Lines,ModemsandModem Circuits.Multiplexing:Frequency-Division Multiplexing,SynchronousTime – DivisionMultiplexing: Characteristics,TDMLink Control,DigitalCarrierSystemsStatisticalTime-Division Multiplexing: Characteristics.

TEXTBOOKS:
1. WilliamStallings, Dataand ComputerCommunications,7th Edition,PearsonEducation Inc.,2004
2.Mary E.S. Loomis, DataCommunications, PHI-N.J.1983(Capter 3, Chapter5)
3. PaulBates,PracticalDigitalandDataCommunications,PHI-N.J. 1987(Chapter5)

REFERENCEBOOKS:
1.BehrouzA.Forouzan, DataCommunicationsand Networking, 3rd EditionTMH,2004
2.WilliamA.Shay,Understanding DataCommunications&Networks, 2nd Edition Thomson-Brooks/Cole – Vikaspublishing House, 1999
3.MichaleA.Miller,Data&NetworkCommunications,Thomson/Delmar –VikasPublishingHouse, 2000

CSE 3.2.5 ELECTIVE-II (1) PRINCIPLES OF PROGRAMMING LANGUAGES Credits:4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ. Exam:3Hours Univ. ExamMarks:70

Language Design Issues: Why StudyProgramming Languages, A Short History of ProgrammingLanguages,Role of Programming Languages, ProgrammingEnvironments
Impact ofMachineArchitectures: TheOperationofaComputer,VirtualComputersandBindingTimes
LanguageTranslationIssues:ProgrammingLanguageSyntax,StagesinTranslation,FormalTranslationModels, Recursive Descent Parsing.
Modeling Language Properties: Formal Properties of Languages, Language Semantics.
Elementary Data Types:Propertiesof Types andObjects,ScalarData Types,Composite Data Types**Encapsulation**:Structured Data Types, Abstract Data Types, Encapsulation by Subprograms, Type Definitions.
Inheritance: Abstract Data Types Revisited, Inheritance, Polymorphism
SequenceControl:ImplementandExplicitSequence Control, Sequence with ArithmeticExpressions, SequenceControlBetween Statements,Sequencing withNon-arithmetic Expressions.
SubprogramControl:SubprogramSequenceControlAttributes ofData Control, ParameterTransmission, ExplicitCommonEnvironment.
StorageManagement:ElementsRequiringStorage,Programmer – andSystem– ControlledStorage,StaticStorage Management, Heap Storage Management
Distributed Processing:VariationsonSubprogramControl,ParallelProgramming,HardwareDevelopments, SoftwareArchitecture
NetworkProgramming: Desktop Publishing,TheWorldWideWeb

Text Book:

Programming languages–Design andImplementationby TerrenceW.Pratt MarvinV.Zelkowitz.3rdEdition, Prentice Hall of India.

References:

1. Conceptsof Programming Languages byRobertL. Sebesta, 4th EditionPearsonEducation.
2. Fundamentals of Programming Languages, Design& Implementationby SeyedH.Roosta. Vikas publications.
3. ProgrammingLanguagesbyParadigm andPractice –Doris ApplebyJuliusJ.Vendekopple Tata McGraw Hill Edition.

CSE 3.2.5 **ELECTIVE-II (2)BIOINFORMATICS** **Credits:4**

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3Hours Univ. ExamMarks:70

1. **Introduction:**
   Definitions,Sequencing,Biological sequence/structure,Genome Projects, Pattern recognitionan prediction,Foldingproblem, Sequence Analysis, Homology and Analogy.
2. **Protein Information Resources**
   Biological databases, Primary sequence databases, Protein Sequence databases, Secondary databases, Protein pattern databases,andStructureclassification databases.
3. **Genome Information Resources**
   DNA sequence databases, specialized genomic resources
4. **DNASequenceanalysis**
   Importance of DNA analysis, Gene structure and DNA sequences, Features of DNAsequenceanalysis,EST(ExpressedSequenceTag)searches,Gene hunting, Profile of a cell, EST analysis, EffectsofESTdataonDNAdatabases.
5. **Pair wise alignment techniques**
   Database searching, Alphabets andcomplexity,Algorithmandprograms, Comparing two sequences, sub-sequences, Identity and similarity, The Dotplot, Local and global similarity, differentalignmenttechniques,Dynamic Programming, Pair wise database searching.
6. **Multiple sequence alignment**
   Definition and Goal, The consensus, computationalcomplexity,Manualmethods, Simultaneousmethods,Progressivemethods,DatabasesofMultiplealignments and searching
7. **Secondary database searching**
   Importance and need of secondary database searches, secondary database structureandbuildingasequencesearchprotocol
8. **Analysis packages**
   Analysis package structure, commercial databases, commercial software, comprehensive packages, packages specializing in DNA analysis, Intranet Packages, Internet Packages.

Text Books:

1. Introduction to Bioinformatics, T K Attwood & D J Parry-Smith
   Addison Wesley Longman
2. Bioinformatics- A Beginner's Guide, Jean-Michel Claveriw, CerdricNotredameWILEY dreamlech India Pvt. Ltd

ReferenceBooks:

1. Introduction toBioinformatics,ArthurM.Lesk, OXFORDpublishers (Indian Edition)

CSE 3.2.5 ELCTIVE-II(3) IMAGEPROCESSING Credits:4

Instruction:3Periods&1Tut/Week SessionalMarks:30
Univ. Exam:3Hours Univ. ExamMarks:70

1. Fundamentals of Image Processing
ImageAcquisition,ImageModel,Sampling,Quantization,Relationship between pixels, distance measures,connectivity,ImageGeometry,Photographic film.Histogram:Definition,decision of contrast basing onhistogram, operations basingon histograms likeimage stretching,imagesliding, Image classification. DefinitionandAlgorithm of Histogramequalization.
2. Image Transforms:-
A detail discussion on Fourier Transform, DFT,FFT,properties.A brief discussion on WALSH Transform, WFT, HADAMARD Transform, DCT.
3. Image Enhancement: (bySPATIALDomain Methods)
a)Arithmeticandlogicaloperations,pixelorpointoperations,sizeoperations, b. Smoothing filters-Mean,Median,Modefilters–Comparativestudy, etc. Edgeenhancementfilters – Directorialfilters,Sobel, Laplacian,Robert, KIRSCH, Homogeneity&DIFFFilters,prewittfilter,ContrastBasededge enhancementtechniques.Comparativestudy.d. Low Pass filters, High Pass filters, sharpening filters. – ComparativeStudy.e.Comparativestudyofallfilters.f.Colorimageprocessing.
4. Image enhancement: (By FREQUENCYDomain Methods). Design of Low pass, High pass, EDGE Enhancement,smoothening filtersin Frequency Domain.Butterworth filter,Homomorphic filtersin FrequencyDomain.Advantagesoffiltersinfrequencydomain, comparativestudyoffiltersin frequency domain andspatial domain.
5.Image compression: Definition, Abrief discussion on– Run length encoding, contourcoding, Huffman code,compressiondueto changein domain,compression duetoquantization,Compressionatthetime of image transmission. Briefdiscussion on: Image Compressionstandards.
6. ImageSegmentation:Definition, characteristics of segmentation.Detection ofDiscontinuities, ThresholdingPixel based segmentation method. Regionbased segmentation methods– segmentation by pixelaggregation,segmentation bysub regionaggregation,histogram based segmentation, spiltand merge technique.Useof motion in segmentation(spatialdomain techniqueonly)
7. Morphology:-
Dilation,Erosion,Opening,closing,Hit-and-Miss transform, Boundary extraction,
Region filling, connected components,thinning,Thickening,skeletons,Pruning
ExtensionstoGray–ScaleImages Application of Morphology in I.P

TextBook:
DigitalImageProcessing,RafaelC. Gonzalez andRichardE.Woods,Addision Wesley

Referencebooks:
1. Fundamentals of ElectronicImage Processing,Arthur .R.Weeks, Jr. (PHI)
2. Image processing,Analysis, and Machinevision, Milan Sonka,Vaclav Hlavac, Roger Boyle, Vikas PublishingHouse.

CSE 3.2.5 **ELECTIVE-II (4) V H D L** **Credits:4**

Instruction:3Periods& 1Tut/Week SessionalMarks:30
Univ. Exam: 3Hours Univ. Exam. Marks:70

1. OverviewofDigitalDesign with Vermilion HDL
2. Hierarchical Modeling Concepts
3. BasicConcepts
4. Modulesandports
5. Gate-LevelModeling
6. Dataflow Modeling
7. BehaviourModeling
8. Tasks andFunctions

Text Book:

1. VerilogHDL–AGuidetoDigitalDesign and Synthesis, Samir Palnitkar,PearsonEducation Pte. Ltd. (chapters: 1,2,3,4,5,6,7,8), 2001

ReferenceBooks:

1. Fundamentals ofDigitalLogicwithVerilog Design,StephenBrown andZvonkoVranesic, Tata-McgrawHill,2002
2. A VerilogHDL Primer, J. Bhasker, SecondEdition, Star galaxyPub.,1999

CSE3.2.6 **COMPUTERARCHITECTURE** **Credits:4**

Instruction:3Periods&1Tut/Week SessionalMarks:30
Univ. Exam:3Hours Univ. ExamMarks:70

Computer Evolution, ComputationalModels TheConcept ofComputerArchitecture
IntroductiontoParallelProcessing
Introduction toInstruction – LevelParallelProcessors
PipelinedProcessors VLIW Architectures Superscalar Processors
Processingof ControlTransferInstructions Code Schedulingof ILP-Processors Introduction to Data ParallelArchitectures Introduction toMIMDArchitectures

Text Books:

1. DezsoSima, TerenceFountain, PeterKacsuk, Advanced Computer Architectures:A Design Space Approach,Pearson EducationInc, 1997.
2. J. L.Hennessy and D.A.Patterson, *ComputerArchitecture:AQuantitativeApproach*,3rd Edition,Morgan Kaufmann Publishing Co.,2002.

ReferenceText

1. WilliamStalling, *Computer Organization& Architecture: Designing for Performance*,6th Edition,PHI, 2003.
2. Kai Hwang, AdvancedComputer Architecture: Parallelism, Scalability, Programmability, TMH, 2001

CSE3.2.7 **FILE STRUCTURES LAB** **Credits:2**

Lab: 3 Periods/week
Univ. Exam:3Hours

SessionalMarks:50
Univ. Exam. Marks:50

1. **FileOperations:**
   Opening,reading,writing,closingandcreatingoffilesinC^{++}

2. **Studyofsecondarystoragedevices:**
   Tracks,sectors,blockcapacityofdisk,tapeandCDROMs

3. **FileStructuresinC^{++}**
   Readingastreamoffields,recordstructuresanditslengthindicators,Mixingof numbersandcharacters,Useofahexdump,Retrievingrecordsbykeysusing sequentialsearch,directaccess

4. **Fileperformance**
   Datacompression,storagecompacting,reclaimingspacedynamically

5. **Indexingandindexedsequentialfiles**
   Indexfile,invertedfileoperations,usageofBandB^{++}trees

6. **Hashingfiles**
   Hashingfunctions,algorithms,recorddistributionandcollisionresolutionbyprogressiveoverflow,Extendablehashingandhashingperformance

CSE3.2.8 **DBMSLAB** **Credits:2**

Lab: 3 Periods/week SessionalMarks:50
Univ. Exam: 3Hours Univ. Exam. Marks:50

StudyfeaturesofacommercialRDBMSpackagesuchasORACLE/DB2,MSAccess,MYSQL&StructuredQuery Language (SQL) used with theRDBMS.(Selecttwo ofRDMSs)

Laboratoryexercises shouldincludedefining schemas forapplications, creationof adatabase, writing SQL queries, to retrieve informationfromthe database, useof hostlanguages, interface with the embeddedSQL, useofforms&reportwritingpackagesavailablewiththechosenRDBMSproduct.

Some sample applications, which may be programmed, are given below: Accountingpackageforashop,
Databasemanagerfor a Magazine agencyora newspaper agency, Ticketbookingfor performances,
Preparing greeting cards & birthday cards,
Personal accounts - Insurance, loans, mortgagepayments, etc., Doctor's diary& billingsystem,
Personalbankaccount, Class marks management, Hostel accounting,
Video Tape library, Historyof cricket scores,
Cable TVtransmission programmanager, Personallibrary.

B.TECH. (CSE) 4th YEAR I-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessionals	Total	
CSE 4.1.1	OBJECT ORIENTED SOFTWARE ENGG.	3	1	--	70	30	100	4
CSE 4.1.2	COMPUTER NETWORKS	3	1	--	70	30	100	4
CSE 4.1.3	ARTIFICIAL INTELLIGENCE	3	1	--	70	30	100	4
CSE 4.1.4	PRINCIPLES OF ECONOMICS & MANAGEMENT	3	1	--	70	30	100	4
CSE 4.1.5	ELECTIVE-III	3	1	--	70	30	100	4
CSE 4.1.6	WEB TECHNOLOGIES	3	1	--	70	30	100	4
CSE 4.1.7	GRAPHICS &MULTIMEDIA LAB.	--	--	3	50	50	100	2
CSE 4.1.8	OBJECT ORIENTED SOFTWARE ENGG. LAB.	--	--	3	50	50	100	2
CSE 4.1.9	INDUSTRIAL TRAINING & SEMINAR*	-	-	-		100	100	2
							TOTAL CREDITS	30

ELECTIVE-III:

[1]. EMBEDDED SYSTEMS [2]. NEURAL NETWORKS & FUZZY LOGIC

[3]. RANDOM PROCESSES IN ENGINEERING.

* The industrial training will be for three weeks during the summer after third year second semester and assessment will be done in the 4th year first semester with a seminar on the training he/she got.

CSE 4.1.1 **OBJECT ORIENTED SOFTWARE ENGINEERING** **Credits:4**

Instruction:3Periods&1Tut./Week SessionalMarks:30
Univ.Exam:3Hours Univ. ExamMarks:70

1. Software Engineering:
Softwarerelated problems,softwareengineering, concepts,developmentactivities
2. Modeling: Modeling withUML
3.Project Communications:
Projectcommunication,modes,mechanismsandactivities
4. Requirements:
Requirementselicitation, concepts,activities&managing requirementselicitation
5. Analysis:
Analysis overview, concepts, activities and managinganalysis
7. SystemDesign:
Design overview,concepts,activitiesand managingsystemdesign
7. Object Design:
Object designoverview, concepts, activities and managingobject design
8. RationaleManagement:
Rationaleoverview,concepts,activitiesand managing rationale
8. Testing;
Testing overview,concepts,activitiesand managingtesting
10. SoftwareConfiguration Management:
Configuration Managementoverview,concepts,activitiesandmanagingconfiguration management
11. ProjectManagement:
Projectmanagement overview,concepts,activitiesand managingprojectmanagementmodelsand activities.

TextBook:
Object-Oriented SoftwareEngineering:Conquering Complex andChanging SystemsBernd BrueggeandAllenH.DutoitPearsonEducationAsia

ReferenceBook:
Object-Oriented SoftwareEngineering: Practical softwaredevelopmentusing UML andJavaTimothyC. LethbridgeandRobertLaganiereMcGraw-HillHighereducation

CSE 4.1.2 **COMPUTER NETWORKS** **Credits:4**

Instruction:3Periods&1Tut/Week SessionalMarks:30
Univ.Exam:3Hours Univ. Exam Marks:70

Switched Networks,Circuit-Switching Networks,CircuitSwitchingConcepts,Softswitch Architecture, PacketSwitchingPrinciples, X.25,FrameRelay
Asynchronous Transfer Mode: ProtocolArchitecture,ATM LogicalConnections,ATMCells, ATM ServiceCategories,Routing in Switched Networks
Congestion Controlin SwitchedDataNetworks: EffectsofCongestion, Congestion Control, Traffic management, Congestion Controlin PacketSwitched networks
PrinciplesofCellularNetworks
Local Area NetworkOverview:Background,Topologiesandtransmissionmedia, LAN Protocol Architecture, Bridges, Layer 2 and Layer 3Switches
High SpeedLANs:The Emergence ofHigh Speed LANs, Ethernet
WirelessLANs:Overview,Wireless LANTechnology, IEEE802.11Architectureand Services.
Internet Protocols:Basic protocolFunctions, Principles of Internetworking,Connectionless Internetworking, Internet Protocol
InternetOperation:Multicasting,RoutingProtocols:Autonomous Systems&ApproachestoRouting **Transport protocols**:Connection oriented TransportProtocolMechanisms:Reliable Sequencing Network Service, TCP:TCPServices,TCPHeader Format,TCPMechanisms,UDP
Distributed Applications: ElectronicMail:SMTP,HTTPOverview,NetworkManagementSystems, SNMPv1

Text Book: DataandComputerCommunications,WilliamStallings 7th Edition, PearsonEducation,2004

ReferenceBooks:

1. DataCommunications and Networking, BehrouzA. Forouzan, 3rd Edition,TMH,2004
2. Computer Networking:A Top-Down Approach Featuring theInternet,JamesF.KuroseandKeithW. Ross,2nd Edition,Pearson Education,2002
3. Computer Networks, AndrewS. Tanenbaum, 4thEdition,PearsonEducation,2003
4 An EngineeringApproach to Computer Networking,S.Keshav, PearsonEducation, 1997
5 Computer Networks and Internets with Internet Applications, Ddouglas e. Comer, 4thEdition, PearsonEducation, 2003

CSE 4.1.3 **ARTIFICIALINTELLIGENCE** **Credits:4**

Instruction:3Periods& 1Tut/Week SessionalMarks:30
Univ.-Exam:3 Hours Univ. Exam-Marks:70

Introduction toArtificialIntelligence,ArtificialIntelligenceTechnique,Representationofaproblem as State spacesearch,productionsystems,Problemcharacteristics, Production Systemcharacteristics

Heuristic Search Technologies
Generate&TestHillClimbing, BestFirstsearch, Problem reduction, Constraintsatisfaction,MeansEndoAnalysis

PredicateLogic
Proof with Backward Chaining, Resolution, question answering.

Representing Knowledge UsingRules:
ProceduralVsDeclarativeknowledge, Logic Programming,ForwardvsBackward Reasoning,Matching,ControlKnowledge

SymbolicReasoning withuncertainty
Non-monotonic Reasoning, Dependency–DirectedBacktrackingTMS.
StatisticalReasoningwithBayesTheorem, certaintyFactors&RuleBased System,DS-Theory.

Weak& Strong SlotFillerStructures
Semantic nets, Frames, Conceptualdependencies, Scripts

Planning
Block world, Componentsofa Planning System, Goal State Planning, Non LinearPlanning, Hierarchical Planning.

NaturalLanguageProcessing
SyntacticAnalysis,SemanticAnalysis, Discusesand PragmaticProcessing.

ExpertSystems
Representing and UsingDomain Knowledge, Expert Systems Shells, Explanation

TextBooks:

1.ArtificialIntelligence,Rich E&KnightK– TataMcgraw hill(1991)
2.Introduction toArtificialIntelligence&Expert Systems, Paterson. PHI

CSE 4.1.4 PRINCIPLES OF ECONOMICS AND MANAGEMENT Credits:4

Instruction:3 Periods&1Tut/Week SessionalMarks:30
Univ.Exam:3Hours Univ. Exam. Marks:70

1. **Introduction to Managerial Economics-** Wealth, Welfare and Scarce Definitions of Economics; Micro & Macro Economics; Demand-Law of Demand, Elasticity of Demand, types of elasticity and factors determining price elasticity of Demand: Utility-Law of Diminishing Marginal Utility and its limitations.

2. **Conditions of different Market Structures**- Perfect Competition, Monopolistic Competition, Monopoly, Oligopoly and Duopoly.

3. **Forms of Business Management**- Sole Proprietorship, Partnership, Joint Stock Company- Private limited and public limited companies, Public enterprises and their types.

4. **Introduction to Management**– Functions of Management-Taylor`s Scientific Management, Henry Fayol`s Principles of Management; Human Resource Management-Basic functions of HR manager; Man Power Planning, Recruitment, Selection, Training, Development, Placement, Compensation and Performance Appraisal (in brief).

5. **Production Management**- Production Planning and Control, Plant Location, Break-Even Analysis, assumptions and applications.

6. **Financial Management**- Types of Capital; Fixed and Working Capital and Methods of Raising Finance; Depreciation: Straight line and Diminishing Balance methods. **Marketing Management-** Functions of Marketing and Distribution Channels.

7. **Entrepreneurship-** Entrepreneurial Functions, Entrepreneurial Development: Objectives, Training, Benefits; Phases of Installing a Project.

Text Books:

1. K. K. DEWETT, **Modern Economic Theory,** S. Chand and Company, New Delhi-55.
2. S. C. Sharma and Banga T. R., **Industrial Organization & Engineering Economics,** Khanna Publications, Delhi-6.

References:

1. A. R. Aryasri, **Management Science,** Tata Mc Graw-Hill, New Delhi -20.
2. A. R. Aryasri, Managerial Economics and Financial Analysis, Tata Mc Graw-Hill, New Delhi -20.

CSE 4.1.5 **ELECTIVE-III(1) EMBEDDED SYSTEMS** **Credits:4**

Instruction:3 Periods&1Tut/Week SessionalMarks:30
Univ.-Exam:3Hours Univ. Exam. Marks:70

Introduction to embedded systems hardwareneeds;typical and advanced, timingdiagrams, memories (RAM,ROM, EPROM).Tristate devices,Buses,DMA,UARTandPLD's.Built-ins onthemicroprocessor.

Interrupts basics, ISR;Context saving, shared dataproblem. Atomic and critical section, Interruptlatency. Surveyofsoftware architectures, Round Robin,Functionqueuescheduling architecture, Useof real time operating system.

RTOS,Tasks, Scheduler, Shared datareentrancy, priorityinversion,mutex binary semaphore and countingsemaphore.

Intertask communication, message queue,mailboxes andpipes, timer functions, events. Interruptroutines in anRTOS environment.

Embedded system softwaredesign using anRTOS. Hard realtime and softreal time system principles, Task division, need ofinterruptroutines,shared data.

EmbeddedSoftwaredevelopmenttools.Host and target systems, cross compilers, linkers, locatorsfor embedded systems.Gettingembedded softwareinto thetargetsystem.

Debuggingtechniques. Testingonhostmachine,Instruction set emulators, logic analysers. In-circuit emulators and monitors.

Text Books:

1.DavidA. Simon, An EmbeddedSoftwarePrimer, Pearson Education,Inc., 1999
2. Sriram V Iyer and Pankaj Gupta, Embedded Real Time Systems programming, TMH,2004

ReferenceBooks:

1.Frank Vahid/ Tony Givargis, EmbeddedSystems Design –AUnified Hardware/Software Introduction, JohnWiley & Sons, Inc., 2002
2. RajKamal, Embedded Systems, Architecture, Programming andDesign, TMH,2003

CSE 4.1.5 ELECTIVE-III (2) NEUTRAL NETWORKS & FUZZY LOGIC Credits:4

Instruction:3Periods& 1Tut/Week SessionalMarks:30
Univ.Exam:3Hours Univ. Exam-Marks:70

1. Neural Networks and Fuzzy Systems
   Neural and Fuzzy Machine Intelligence, Fuzziness as Multivalence, The Dynamical-Systems Approach to Machine Intelligence, Intelligent Behavior as Adaptive Model- Free Estimation.
2. Neural Dynamics I: Activations and SignalsNeurons as Functions, Signal Monotonicity, Biological Activations and Signals, Neuron Fields,Neuronal Dynamical Systems, Common Signal Functions, Pulse-Coded Signal Functions.
3. Neuronal Dynamics II: Activation ModelsNeuronal Dynamical Systems, Additive Neuronal Dynamics, Additive Neuronal Feedback, Additive Bivalent Models, BAM Connection Matrices, Additive Dynamic and the Noise-Saturation Dilemma, General Neuronal Activations: Cohen-Grossberg and Multiplicative Models.
4. Synaptic Dynamics I: Unsupervised Learningas Encoding, Change, and Quantization, Four Unsupervised Learning Laws, Probability Spaces and Random Processes, Stochastic Unsupervised Learning and Stochastic Equilibrium, Signal Hebbian Learning, Competitive Learning, Differential Hebbian Learning, Differential Competitive Leering.
5. Synaptic Dynamics II: Supervised Learning
   Supervised Function Estimation, Supervised Learning as Operant Conditioning, Supervised Learning as Stochastic Pattern Learning with known Class Memberships, Supervised Learning as stochastic Approximation, The Back propagation Algorithm.
6. Fuzziness versus Probability
   Fuzzy Sets and Systems, Fuzziness in a Probabilistic World, Randomness vs. Ambiguity: Whether vs. How much, The Universe as a Fuzzy Set, The Geometry of Fuzzy Set, The Geometry of Fuzzy Sets: Sets as Points. The Fuzzy Entropy Theorem, TheSubset hood theorem. The Entropy-Subset hood Theorem.
7. Fuzzy Associative Memories
   Fuzzy Systems as Between-Cube Mappings, Fuzzy and Neural Function Estimators, Fuzzy Hebb FAMs, Adaptive FAMs: Product-Space Clustering in FAM Cells.

TEXT BOOK:
Neural Networks & Fuzzy Systems, Bark Kosko, PHI Published in 1994

REFERNCE BOOKS:
1. Fundamentals of Artificial Neural Networks, Mohamad H Hassoum. PHI
2. Neural network Design, Hagan, Demuth and Beale, Vikas Publishing House
3. Fuzzy Set Theory & its Application, .J. Zimmerman Allied Published Ltd.

CSE 4.1.5 ELECTIVE-III (3) RANDOMPROCESSESIN ENGINEERING Credits:4

Instruction:3Periods&1Tut/week SessionalMarks:30
Univ.Exam:3 Hours Univ. Exam Marks:70

1.STOCHASTIC PROCESSES:- Notion of Stochastic Process, Classification of Stochastic Process according to Time and StateSpace;DiscretetimeMorkovchains,nth step transition probabilities, stationery distributionofMorkovchains,Poissonprocess, PropertiesofPoisson;Birth andDeathProcess,Timedependent Birth and Death process, Renewal theory, Applications of elementary renewal theorem and key renewal theorem.

2. Stationary and Non Stationary processes: AR Process; NA Process; ARMA Process, ARIMAProcess,BoxandJinkinsModels,Correlogram analysis, Periodogram analysis, Spectrum of a Process.

3. QUEUEING THEORY: Non Morkovchian queues, Phase type Technique, Embedded Markovchains Technique, GI/G/I Queues model, Polzak. Kintchins formula, queueswithbulkarrivalsqueues with bulk services.

4. PRIORITY QUEUINGMODELS: Queuesin Series, Queues in Parallel, Scheduling algorithms,throughputanalysisandwaitingtime distributions, Applications of Queuing theoryinCommunicationNetworks.

5.RELIABILITYANALYSIS:ConceptsofReliability, Failure Time distributions, Hazardratefunctions,Reliabilityofacomponent,Bath-tubcurve, System reliability, Seriessystems,parallelsystems,Standby redundancy,Availability,Maintainability, Faulttreeconstructions,Faultanalysis.

REFERRENCES:

1. Probability,Statisticsand Random Processes – By T.Veerarajan Tata McGraw –Hill
2. Probability and Statistics withReliability, Queueing& Computer ScienceApplications – By Kishore S. Trivedi (Prentice Hall)

CSE 4.1.6 **WEB TECHNOLOGIES** **Credits:4**

Instruction:3Periods& 1Tut/Week SessionalMarks:30
Univ. Exam: 3Hours Univ. Exam. Marks:70

HTML Common tags- List, Tables, images, forms, Frames; Cascading Style sheets;

Java Script: Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK, Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's

Web Servers and Servlets: Tomcat web server, Introduction to Servelets: Lifecycle of a Serverlet, The Servelet API, The javax.servelet Package, Reading Servelet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues,

JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations

Database Access: Database Programming using JDBC, Studying Javax.sql.* package,Accessing a Database from Servlets & JSP Page , Application – Specific Database Actions,Deploying JAVA Beans in a JSP Page, Introduction to struts framework.

TEXT BOOKS:

1. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
2. Advanced Java™ 2 Platform How to Program,Deitel/Deitel/Santry
3. Java Server Pages –Hans Bergsten, SPD O'Reilly

REFERENCE:

1. HTML Black Book: The Programmer's Complete HTML Reference Book-by Steven Holzner
2. Core SERVLETS ANDJAVASERVER PAGES VOLUME 2: CORE TECHNOLOGIES by Marty Hall and Larry Brown Pearson

CSE4.1.7 GRAPHICS&MULTIMEDIALABORATORY Credits:2

Lab: 3 Periods/week SessionalMarks:50
Univ. Exam: 3Hours Univ. Exam-Marks:50

Graphics: using anygraphicpackage.

1. Drawingvarious typesof lines and curves.
2. Creating various typestextandfonts.
3. Creating twodimensionalobjects using the lines and curves
4. Animating thetwo dimensional picturesusing transformations.
5. Coloringthe pictures and Zooming.
6. Creating an object andapplying animation of keyframing.
7. Creating threedimensional objectsusingwire framemodeling.
8. Rotation,scalingand translating the3Dobjects.
9. Coloring the3Dobjects.
10. Shading the 3Dobjects
11. Rendering theobjects
12. Creatingsmooth surfaces.
13. Creatingruggedsurfacesbasedon fractal geometry.

Multimedia:

1 Preproduction&Presentation Graphics:Create a7-10slidepresentationinyourfavorite presentationgraphicsapplication.(Powerpoint issuggested; CorelPresentations9isfreeandis acceptable.)
2. Typefacesand Graphics:Create1vectorand1bitmapgraphic;theymust be*youroriginal work*created inanyoftheacceptabletools.
3. DesktopPublishing:Create a2-page desktop – published"newsletter," possiblyusingyour "WhatisMultimedia?"text.Includegraphics.
4. ProductionPlanning andDesign:Createa proposalofproject.Includesummary,flowchart, elementandresource lists.
5. UserInterfaceDesign&GraphicsII:Create a userinterfaceforyour finalproject.Include2backgroundsand1buttonset.Aimforacohesive look.
6. MultimediaSound:Create 2soundtracks and2EFXsoundsforapreviousproject.
7. DigitalVideo:Usevideocapturetodigitizeyourvideoshoot to another videosourcetocreateshort production (15-45seconds)
8. Createthree basic WebpagesusingDreamweaver /flashorotherauthoringpackageorwritebare HTMLifyouareable;pagesmustbelinkedand mustincludeat least one graphicper page.

Books:

1) PrabhatK.Andleigh&KiranThakrar,“Mulitmedia Systems Design”,Prentice Hallof India, New Delhi.
2) CalleenCoo rough,“Multimediaand theWeb Creating digitalExcitement”,VikasPublishing House, New Delhi.
3) JamesE.Shuman,“Multimediain Action”,VikasPublishingHouse,NewDelhi.

CSE4.1.8 **OBJECT ORIENTED SOFTWARE ENGINEERING LAB** **credits:2**

Lab: 3 Periods/week SessionalMarks:50
Univ.-Exam: 3Hours Univ. Exam. Marks:50

Computing Platform:

Each studentgroup choosesitsown platform,subjecttoapprovalbytheinstructor

CourseObjectives:

1. Theycan design andimplementcomplex softwaresolutions usingstateoftheart softwareengineeringtechniques.
2. Thehaveworking knowledgeof UML,sourcecontrol,andprojectmanagement.
3. Theyhave deep knowledge of thetechnologies they used forimplementing their project.
4. Theyknow how totest and document software.
5. They are capable of working as part of a software team anddevelop significant projects underatight deadline.
6. They are able topresent theirwork in aprofessional manner.

Topicsto becovered:

1. SoftwareEngineering Process.
2. Unified Modeling Language(UML).
3. DataStructuresandSpecification.
4. Object-orienteddesign.
5. Debugging.

SyllabusFlexibility:

High. Thestudentsarefreeto choose aproject basedon the instructor's approval.

AssessmentMethods:

1. Groupmeetingswithfaculty:initialproposal,code review,tracer-bullet implementation demo, finaldemo.
2. Design documents. Write-up.
3. Codedocumentation.
4. Presentations.

Thestudentsgivetheirfinalpresentationsanddemos.

Also, each project teammeets individually with the instructor at least four times during the semester. The agenda for each of the four meeting is as follows:

1. Team presentsprojectidea andhas itapprovedbyinstructor.(Firstmonth)
2. design/codereview. Instructorgoes overdesign/code withtheteamto pointoutproblems and formalize requirements. Instructordeterminesrequirementsfortracer-bullet implementation. (Secondmonth)
3. Tracer-bulletimplementationdemo.Teamshowsthatithasachievedfull vertical integration functionality. Instructor notices missed requirementsand remindsstudentsof requirementsfor finalproject.(Beginningof thirdmonth).

Final meeting.Verify requirements, design,documentation, testing,write-up,divisionof labor, etc. (lastmonth).

SessionalMarks Allotment:

MonthlyMeeting Participation	:10%
Monthly Progress Reports	:15%
Design/code Document	: 15%
Presentation	: 10%
PrototypeDemonstration	: 10%
Final Project Demonstration	: 30%
FinalProjectReport	:10%

General Software Engineering Tips:
Be carefulwhen making major modifications and keep backups! A good motto:Thereisno such thing as a safe softwarechange.
Oneofthe biggestmistakesthateven professionalsoftwareteamsmake is modifying code atthe last minute.
Eitherresistthe urgetomake lastminute changes,or keep them isolated and well-marked so that they can be backed out easily if necessary.
Test,test,test!!! Youmusttestyour system thoroughlyafter making anychange,no matter how small.Else you willnotknowifabug wasintroduced!You will getno sympathyifyou breakyoursystematthelast minute.

RegressionTesting:
A good habitto getinto:frequentlyrun your program on an extensivetestset.

Onceyou haveaprototype,createasetofexamplesthatyour program handles correctly. Generate filesof the input and the correct output as a*testset.*

When youmakesignificantchanges,run your program on thetestset.Iftheoutputisdifferent,then you willknowthatyou'veintroduced abug.(Oriftheoutputisimproved,you should updatethetestset.)

Puttogetheranextensiveregressionset!Ifitalertsyou toonemajorbug (anditalwaysdoes),then itis timewellspent.

After verifyingthat anew changeis "safe", save aversion of your entire system! Never,EVERmake changesto thesavedversion– itis areliable version thatyou can recover in an emergency.

Documentation:
Getintothe habitof documenting your codequicklyasyou go.If youthink you'll remember whyyoudid something, you are probablywrong.

Computerscientiststypically hateto do documentation. Onereasonisthattheyleave itallfortheend!

Getintothe habitofwritingsmallcomments asyou go.Afewcomments,explainingwhat's happeningand why,canmakeaworld of difference.

When youmakeachange,markitwith yourinitials,the date, abriefexplanation,andan example.This will help enormouslyifthechangeneedsto beremovedormodified,and will preventthrashing.

Working asaTeam:
Behonestand realisticwith yourteammateswhen setting goals.Ifyou failto meeta promised deadline,it affectsthe wholeteam,not justyou.

Communication iscrucial!Don'tmakemajor decisions byyourself,andlet peopleknowwhenyou are behindor ahead of schedule.

Try to exploiteachother's strengths.

CSE4.1.9 **INDUSTRIAL TRAINING & SEMINAR** **Credits:2**

Univ. Exam:Internal InternalMarks:100

The industrial training will be for three weeks during the summer after third year secondsemester andassessment will be done in the 4th year first semester with a seminar on the traininghe/she got.

B.TECH. (CSE) 4th YEAR II-SEMESTER SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM 2010-11 ADMITTED BATCH								
Sub. Ref. No.	Name of the Subject	Periods			Maximum Marks			Credits
		Theory	Tutorial	Lab.	Exam	Sessionals	Total	
CSE 4.2.1	DISTRIBUTED OPERATING SYSTEMS	3	1	--	70	30	100	4
CSE 4.2.2	CRYPTOGRAPHY AND NETWORK SECURITY	3	1	--	70	30	100	4
CSE 4.2.3	ELECTIVE-IV	3	1	--	70	30	100	4
FE02	**FREE ELECTIVE-II**	**3**	**1**	**--**	**70**	**30**	**100**	**4**
CSE 4.2.4	DATA COMMUNICATIONS & NETWORK PROGRAMMING LAB	--	--	3	50	50	100	2
CSE 4.2.5	PROJECT	--	--	3	50	50	100	8
							TOTAL CREDITS	26

ELECTIVE-IV:

[1]DATA WARE HOUSING & DATA MINING [2] SERVICE ORIENTED ARCHITECTURE

CSE 4.2.1 **DISTRIBUTED OPERATING SYSTEMS** **Credits:4**

Instruction:3Periods&1Tut/Week SessionalMarks:30
Univ. Exam: 3Hours Univ. Exam-Marks:70

Introduction to DistributedSystems, What is a Distributed System? Hard ware concepts, Software concepts, Design issues.

Communication in Distributed Systems,Lay red Protocols, ATM networks, The Client – servermodel, Remote Procedure call, Group communication.

Synchronization in Distributed System, Clock Synchronization, Mutual Exclusion, Election algorithms, Atomic transactions, Deadlocks in Distributed Systems.

Process and processors in Distributed System threads, System Models, Processors allocation, Scheduling in Distributed System, Fault tolerance,Real timeDistributedSystem.

Distributed File Systems,Distributed File System Design, Distributed File System implementation, Trends inDistributed File System.

Distributed Shared Memory, Introduction, Whatis Sharedmemory?Consistency models, Page based Distributed Sharedmemory, Shared – variable Distributed Sharedmemory, Object based Distributed Shared Memory.

TEXT BOOK:
Distributed Operating Systems, Andrew S. Tanenbanm

REFERENCE BOOK:
Advanced Concepts in Operating Systems,Makes Singhal and NiranjanG.Shivaratna.

CSE 4.2.2 CRYPTOGRAPHYANDNETWORKSECURITY Credits:4

Instruction:3 Periods & 1Tut/Week SessionalMarks:30
Univ. Exam:3Hours Univ. Exam-Marks:70

INTRODUCTION:Theneedforsecurity– securityapproaches – principlesofsecurity – PlainTextandCipher Text-substitutionandTranspositionTechniques – EncryptionandDecryption – Symmetricand Asymmetric Cryptography – Stenography-key rangeand keysize– typesof attacks
SYMMETRIC KEY CRYPTOGRAPHIC ALGORITHMS: Algorithm types and modes-overviewof symmetric key cryptography-DES-IDEA-RC5-BLOWFISH-AES-Differential and Linear Cryptanalysis.

ASYMMETRICKEYCRYPTOGRAPHICALGORITHMS:Overviewofasymmetrickeycryptography-RSAalgorithm– symmetricandasymmetrickeycryptographytogether-digital signatures-knapsack algorithm-some other algorithms.
PUBLIC KEYINFRASTRUCTURE:Introduction– Digitalcertificates – PrivateKey management-ThePKIX model – PublicKeyCryptography Standards- XML, PKIand Security

INTERNET SECURITYPROTOCOLS:Basicconcepts – SSL – SHTTP – TSP – SET-SSL versus SET-3DSecureprotocol-Electronic money-Email security – WAPsecurity – securityin GSM

USERAUTHENTICATIONMECHANISMS:Introduction– Authenticationbasics – passwords – authenticationtokens-certificate based authentication-biometrics authentication– Kerberos-SSO approaches

PRACTICALIMPLEMENTATIONSOFCRYPTOGRAPHY/SECURITY:CryptographicsolutionsusingJava-Cryptographic solutions usingMicrosoft-cryptographic toolkits-security and operating systems NETWORKSECURITY:BriefIntroductiontoTCP/IP- firewalls-IP security-VirtualPrivateNetworks- casestudies oncryptography andsecurity.

TEXT BOOK:
CryptographyandNetwork security, AtulKahate, TataMcGraw-HillPub companyLtd.,NewDelhi

REFERENCE BOOKS:

1) NetworkSecurityPrivateCommunicationinapublicworld,CharlieKaufman,RadiaPerlman&MikeSpeciner,PrenticeHall of India Private Ltd., New Delhi
2) NetworkSecurityEssentialsApplicationsandStandards,WilliamStallings,PearsonEducation,NewDelhi
3) Network Security:TheCompleteReferencebyRobertaBragg,MarkPhodes-Ousley, KeithStrassberg TataMcgraw-Hill

CSE 4.2.3 ELECTIVE-IV (1) DATA WARE HOUSING AND DATA MINING Credits:4

Instruction:3Periods& 1Tut/Week SessionalMarks:30
Univ. Exam:3 Hours Univ. Exam. Marks:70

1. **Introduction to Data Mining:**
   Motivationandimportance,WhatisDataMining,RelationalDatabases,DataWarehouses,TransactionalDatabases,AdvancedDatabaseSystemsandAdvanced DatabaseApplications,DataMiningFunctionalities,Interestingnessofapattern Classification of Data Mining Systems,Major issuesin Data Mining.
2. **Data Warehouse and OLAP Technology for Data Mining**
   WhatisaDataWarehouse?Multi-DimensionalDataModel,DataWarehouseArchitecture,DataWarehouseImplementation,DevelopmentofDataCubeTechnology, Data Warehousing to DataMining
3. **Data Preprocessing**
   Why Pre-process the Data? Data Cleaning, Data Integration andTransformation Data Reduction, Discretizationand Concept Hierarchy Generation
4. **Data Mining Primitives, Languages and systemArchitectures,DataMining Primitives:**
   What defines a Data Mining Task? A Data Mining query language, DesigningGraphical Use Interfaces Based on aData Mining Query language,Architectures of Data Mining Systems
5. **Concept Description:**
   Characterization and comparison,what is Concept Description? Data Generalization and summarization-based Characterization, Analytical Characterization: Analysisof AttributeRelevance, Mining Class Comparisons: Discriminating between different Classes, Mining Descriptive Statistical Measures in large Databases
6. Mining Association rule in large Databases, Association Rule Mining, Mining Single DimensionalBoolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases, MiningMultidimensional Association Rules from Relational Databasesand Data Warehouses, From Association Mining to Correlation Analysis, Constraint-Based Association Mining
7. Classification and prediction,Conceptsand Issues regarding Classification and Prediction, Classification by Decision Tree Induction,Bayesian Classification, Classification by Back-propagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods like k-Nearest Neighbor Classifiers, Case- Based Reasoning, Generic Algorithms,Rough Set Approach, Fuzzy Set Approaches, Prediction, ClassifierAccuracy
8. Cluster Analysis:
   What is Cluster Analysis?Types of Data in Cluster Analysis, ACategorization of MajorClustering Methods

Text Book:

Data Mining Concepts and Techniques, JiaweiHan and MichelineKamber, MorganKaufman Publications

ReferenceBooks:

1. Introduction to Data Mining, Adriaan, Addison Wesley Publication
2. Data Mining Techniques, A.K.Pujari, University Press

CSE 4.2.3 ELECTIVE-IV (2)SERVICE ORIENTED ARCHITECTURE Credits:4

Instruction:3Periods&1Tut/Week SessionalMarks:30
Univ. Exam: 3Hours Univ. Exam. Marks:70

1. **INTRODUCTION TO SOA,EVOLUTION OF SOA**: Fundamental SOA; Common Characteristics of contemporary SOA; Benefits of SOA; A SOA timeline(from XML to Web Services to SOA); The continuing evolution of SOA (Standards organizations and Contributing vendors); The roots of SOA(comparing SOA to Past architectures).

2. **PRINCIPLES OF SERVICE – OREINTATION**: Services-orientation and the enterprise; Anatomy of a service-oriented architecture; Common Principles of Service-orientation; Service orientation and Object-orientation; Service layer abstraction; Business service layer; Orchestration service layer;

3. **WEB SERVICES AND SOA:** The Web services framework; Services (as WebServices); Service Registry; Service descriptions (with WSDL); Messaging (with SOAP), Transactions, Coordination, Business Activity, Orchestration, Choreography; Addressing, Reliable Messaging, Policies, Metadata, Security, Notification and Events; Semantic Web Services; RESTful Services;

4. **BUSINESS PROCESS DESIGN**: Business Process Management basics; WS-BPEL language basics; WS-Coordination overview; Service oriented business process design; WS-addressing language basics; WS-Reliable Messaging language basics; Service Component Architecture basics;

5. **ENTERPRISE PLATFORMS AND SOA**: SOA platform basics; Enterprise Service Bus basics (including basic and complex patterns); SOA support in J2EE; SOA support in .NET; SOA Reference Architecture;

Text Books:

1. **Service-Oriented Architecture Concepts and Technology and Design**-Thomas Erl, Pearson Education, 2005
2. **Understanding SOA with Web Services** – Eric Newcomer, Greg Lomow, PearsonEducation, 2005
3. **Developing Enterprise Web Services** – An Architect's Guide – Sandeep Chatterjee, James Webber Pearson Education, ISBN 81-297-0491-9

References:

SUGGESTED READING: IT Architecture and Middleware, Strategies for Building Large Integrated Systems, Chris Britton, ISBN 0-201-70907-4

FE 02 **(FREE ELECTIVE-II) INTERNET TECHNOLOGIES** **Credits:4**

Instruction:3 Periods&1Tut/Week SessionalMarks:30
Univ.Exam:3Hours Univ. Exam. Marks:70

Introduction to internet - Internet history, IP address, DNS, e-mail.

HTML Common tags- List, Tables, images, forms, Frames; Cascading Style sheets;

Java Script: - Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK, Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's

Web Servers and Servlets: Tomcat web server, **Introduction** to Servelets: Lifecycle of a Serverlet, The Servelet API, The javax.servelet Package, Reading Servelet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues,

JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations

Database Access: Database Programming using JDBC, Studying Javax.sql.* package,Accessing a Database from Servlets & JSP Page , Application – Specific Database Actions,Deploying JAVA Beans in a JSP Page, Introduction to struts framework.

TEXT BOOKS:

1. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
2. Advanced Java™ 2 Platform How to Program,Deitel/Deitel/Santry
3. Java Server Pages –Hans Bergsten, SPD O'Reilly

REFERENCE:

1. HTML Black Book: The Programmer's Complete HTML Reference Book-by Steven Holzner

2. Core SERVLETS ANDJAVASERVER PAGES VOLUME 2: CORE TECHNOLOGIES by Marty Hall and Larry Brown Pearson

CSE 4.2.4 DATACOMMUNICATIONS & NETWORK PROGRAMMING LAB Credits:2

Lab: 3 Periods/week SessionalMarks:50
Univ.-Exam:3Hours Univ. ExamMarks:50

FIRST CYCLE OF EXPERIMENTS

1.1 PC-to-PC COMMUNICATIONSUNDER **DOS**WITH **NULLMODEM**
a)Using SerialPortsand RS-232C Cable Connection b) UsingParallelPortsand ParallelCable Connection

1.2PC-to-PC COMMUNICATIONSUNDER **DOS**WITH **MODEM**and**4-LINE EXCHANGE**UsingCommunication Software: COMITorXTALK

1.3 PC-to-PCCOMMUNICATIONSUNDER **WIN98's** DIRECTCABLECONNECTIONwith NULL MODEM
a) Using SerialPortsandRS-232 C CableConnection b)Using ParallelPortsand ParallelCableConnection

1.4 PC-to-PC COMMUNICATIONSUNDER **WIN98's DIAL-UP** NETWORKING WITH**MODEM**and**4-LINEEXCHANGE**

1.5 PC – to-PC COMMUNICATIONSUNDER **WIN98's HYPERTERMINAL**WITH **MODEM**and**4–LINEEXCHANGE**

1.6 a) LAN WITH BUSTOPOLOGY with a minimumoftwo systems
i)Windows Peer-to-PeerNetwork ii)Windows NT Client-Server Network
b) LANWITHSTARTOPOLOGY with a minimum of two systems

1.7 a) LANWITH BUSTOPOLOGY with a minimumoftwo systems usingNOVELL Netware
b) LANWITHSTARTOPOLOGYwith a minimum of two systems usingNOVELLNetware

SECONDCYCLE OFEXPERIMENTS

2.1INERNET CONNECTION SET-UP USING**DIAL-UP**NETWORKING

2.2TERMINALNETWORKWITH **UNIX/LINUXSERVER** and one or two Terminals

2.3 **TERMINALNETWORK**WITH **UNIX/LINUX SERVER, Terminal Server,** and one or two terminals

2.4 NETWORK PROGRAMMING EXERCISE-I USING A SIMPLIFIED API
Echo software(Develop echoclient and echo serverprograms and runthetwoprograms on separatecomputers andverifythattheycan communicate Chatsoftware (Developchat clientandchatserver programs and test to ensure they can communicate). Build asimplefiletransferservicethatconsists ofclientand server

2.5 NETWORK PROGRAMMING EXERCISE-IIUSING THESOCKET API

Write an echo client and server using sockets Builda web server using sockets

2.6 CONCURRENTNETWORK PROGRAMMINGEXERCISE–III
Build a Concurrentserver(threads)–Create a server capableof handling connectionsfrom multipleclientsconcurrentlyBuild aConcurrentfiletransferserver(processes)– Create separateprocessesto allowaserverto handlemultipleclientsconcurrently

2.7 NETWORK PROGRAMMING EXERCISE–IVUSING PROTOCOLDESIGN
Design a reliable datatransferprotocol(Devise, implement andtest aprotocolthatprovides reliable datatransfer across anetwork thatdrops,delays or corruptspacketsDesign stop and waitflow controlprotocol Designa sliding window protocol

2.7.1 NETWORKPROGRAMMING EXERCISE–V WITHPROTOCOLSFROM TCP/IPSUITE Build adomain namesystem clientprogram

CSE 4.2.5 **PROJECT WORK** **Credits:8**

Project: 6 Periods/week SessionalMarks:50

Univ. Exam Marks:50

GUIDELINES for preparing the report of the Project Work

FORMAT FOR PREPARATION OF PROJECT REPORT FOR

B. TECH (CSE)

1. ARRANGEMENT OF CONTENTS:

The sequence in which the project report material should be arranged and bound should be as follows:

1. Cover Page & Title Page
2. Bonafide Certificate
3. Abstract
4. Table of Contents
5. List of Tables
6. List of Figures
7. List of Symbols, Abbreviations and Nomenclature
8. Chapters
9. Appendices
10. References

The table and figures shall be introduced in the appropriate places.

2. PAGE DIMENSION AND BINDING SPECIFICATIONS:

The dimension of the project report should be in A4 size. The project report should be bound using flexible cover of the thick white art paper. The cover should be**printed in black letters**and the text for printing should be identical.

3. PREPARATION FORMAT:

3.1 Cover Page & Title Page– A specimen copy of the Cover page & Title page of the project report are given in**Appendix 1.**

3.2 BonafideCertificate–TheBonafideCertificateshallbeindoublelinespacingusing Font Style Times New Roman and Font Size 14, as per the format in**Appendix 2.**

The certificate shall carry the supervisor's signature and shall be followed by the supervisor's name, academic designation (not any other responsibilities of administrative nature), Departmentand fulladdressoftheinstitution wherethesupervisorhas guidedthestudent. Theterm**'SUPERVISOR'**must betypedincapitallettersbetweenthesupervisor'sname and academic designation.

3.3 Abstract – Abstract should be one page synopsis of the project report typed double line spacing, Font Style Times New Roman and Font Size 14.

3.4 TableofContents–Thetableofcontentsshouldlistallmaterialfollowingitaswellasany material whichprecedes it. The title page and BonafideCertificate will not find a place amongtheitemslistedintheTableofContentsbutthepagenumbersofwhichareinlower case Roman letters. One and a half spacing should be adopted for typing the matter under this head. A specimen copy of the Table of Contents of the project report is given in**Appendix 3.**

3.5 List of Tables – The list should use exactly the same captions as they appear above the tablesinthetext.Oneandahalfspacingshouldbeadoptedfortypingthematterunderthis head.

3.6 List of Figures– The list should use exactlythe same captions as theyappearbelow the figuresinthetext.Oneandahalfspacingshouldbeadoptedfortypingthematterunderthis head.

3.7 List of Symbols, Abbreviations and Nomenclature – One and a half spacing should be adoptedortypingthematterunderthishead.Standardsymbols,abbreviationsetc.shouldbe used.

3.8 Chapters –The chapters may be broadly divided into 3 parts (i) Introductory chapter, (ii) Chapters developing the main theme of the project work (iii) and Conclusion.

Themaintextwillbedividedintoseveralchaptersandeachchaptermaybefurtherdivided into several divisions and sub-divisions.

- Each chapter should be given an appropriate title.
- Tables and figures in a chapter should be placed in the immediate vicinity of the reference where they are cited.
- Footnotesshould beused sparingly. They shouldbe typed single space and placed directly underneath in the very same page, which refers to the material they annotate.

3.9 Appendices – Appendices are provided to give supplementary information, which is included in the main text may serve as a distraction and cloud the central theme.

- AppendicesshouldbenumberedusingArabicnumerals,e.g.Appendix1,Appendix 2, etc.
- Appendices, TablesandReferences appearing inappendices shouldbenumbered and referred to at appropriate places just as in the case of chapters.
- Appendicesshallcarrythetitleoftheworkreportedandthesametitleshallbemade in the contents page also.

3.10 ListofReferences–Thelistingofreferencesshouldbetyped4spacesbelowtheheading"REFERENCES" in alphabetical order in single spacing left – justified. The reference material should be listed in the alphabetical order of the first author. The nameof the author/authors should be immediately followed by the year and other details.

A typical illustrative list given below relates to the citation example quoted above.

REFERENCES

1. Ariponnammal, S. and Natarajan, S. (1994) 'Transport Phonomenaof SmSel– X Asx', Pramana –Journal of Physics Vol.42, No.1, pp.421-425.
2. Barnard, R.W. and Kellogg, C. (1980) 'Applications ofConvolution Operators to Problems in Univalent Function Theory', Michigan Mach, J., Vol.27, pp.81–94.
3. Shin,K.G. and McKay, N.D. (1984) 'Open Loop Minimum Time Control of MechanicalManipulationsanditsApplications',Proc.Amer.Contr.Conf.,SanDiego, CA, pp. 1231-1236.

3.10.1 Tableand figures-By thewordTable,ismeanttabulatednumerical datainthebody ofthe project report as well as in the appendices. All other non-verbal materials used in the body of the project work and appendices such as charts, graphs, maps, photographs and diagrams may be designated as figures.

4. TYPING INSTRUCTIONS:

The impression on the typed copies should be black in colour.
Oneandahalfspacingshouldbeusedfortypingthegeneraltext.Thegeneraltextshallbe typed in the Font style 'Times NewRoman' and Font size 14.

*** * * * ***

(A typical Specimen of Cover Page & Title Page)
<Font Style Times New Roman – Bold>

TITLE OF PROJECT REPORT

<Font Size 18><1.5 line spacing>

A PROJECT REPORT
<Font Size 14>

Submitted by
<Font Size 14><Italic>

NAME OF THE CANDIDATE(S)
<Font Size 16>

in partial fulfillment for the award of thedegree

of

<Font Size 14><1.5 line spacing><Italic>

BACHELOR OF TECHNOLOGY
<Font Size 16>

IN

COMPUTER SCIENCE AND ENGINEERING
<Font Size 14>

DEPARTMENT OF COMPUTER SCIENCE AND SYSTEMS ENGINEERING
<Font Size 12>
ANDHRA UNIVERSITY AUTONOMOUS COLLEGE OF ENGINEERING
< Font Size 14>
ANDHRA UNIVERSITY: VISAKHAPATNAM - 530003

<Font Size 16><1.5 line spacing>

MONTH &YEAR
<Font Size 14>

SPECIMEN

SOME PERFORMANCE ASPECTS CONSIDERATIONS OF A CLASS OF ARTIFICIAL NEURAL NETWORK

A PROJECT REPORT

Submitted by

SANDHY. A GAYATHRI. R

in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND SYSTEMS ENGINEERING

ANDHRA UNIVERSITY AUTONOMOUS COLLEGE OF ENGINEERING

ANDHRA UNIVERSITY:: VISAKHAPATNAM-530 003

MAY 2005

(A typical specimen of Bonafide Certificate)
<Font Style Times New Roman>

ANDHRA UNIVERSITY: VISAKHAPATNAM-530 003
<Font Style Times New Roman – size -18>

BONAFIDE CERTIFICATE
<Font Style Times New Roman – size -16>

<Font Style Times New Roman – size -14>

Certified that this project report**"…….TITLE OF THEPROJECT……..."** isthebonafideworkof"**……..NAMEOFTHECANDIDATE(S).……"** who carried out theproject work under my supervision.

<<Signature of the Head of the Department>>
SIGNATURE

<<Name>>
HEAD OF THE DEPARTMENT

<<Academic Designation>>

<<Department>>

<<Full address of the Dept& College >>

<<Signature of the Supervisor>>
SIGNATURE

<<Name>>
SUPERVISOR

<<Department>>

<<Full address of the Dept& College >>

(A typical specimen of table of contents)
<Font Style Times New Roman>

TABLE OF CONTENTS