DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
FACULTY OF TECHNOLOGY & ENGINEERING
THE M.S. UNIVERSITY OF BARODA - VADODARA
SYLLABUS

F.S. BE –I

APH1101 : APPLIED PHYSICS-I

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

1. Interference : Types of interference. Fresnel's bi-prism, white light fringes, determination of thickness of sheet, interference in thin films (conditions for normal incidence), neccessity of extended source, Newton's rings. Michelson interference & its uses. Types of fringes. Antireflection coating, interference filters. 2. Difraction : Fraunhoffer difraction at a circular aperture, plane difraction grating, formation of multiple spectra and determination of wavelenght, dispersive power of grating, resolving power of optical instruments, meaning of resolving power. Rayleigh's criterion of resolution. Resolving poer of grating, prism, telescope and microscope. 3. Polarisation : Goemetry of calcite crystal. Double refraction, Nicol's prism. Huygene's theory of double refraction quarter wave plate. Elliptically and circularly polarised light and production of circularly polarised light. Optical activity. Specific rotation. Fresnel's theory of optical rotation. Laurent's half-shade polarimeter. Photoelasticity. 4. Lasers : Spontaneous and stimulated emission, popolation inversion, structure of laser, properties of laser light (monochromatic, low divergence, coherence). Types of lasers with specification,applications. 5. Ultrasonics : Ultrasonic waves, production and detection, properties and applications of ultrasonic waves. 6. Electricity and magnetism : Magnetic forces on a current, torque on a current loop, hall effect and hall devices, circulating charges, cyclotron and mass spectrometer. Faraday's law of induction, Lenz's law. Induction- a quantitative study, time varying magnetic fields. Betatron, paramagnetism, diamagnetism, ferromagnetism, nuclear magnetism & NMR. 7. Thermoelectricity : Seeback effect, variation of thermo-emf with temperature, thermoelectric series, measurement of thermo-emf, law of intermediate metals. Law of intermediate temperatures. Peltier effect. Thomson effect. Total emf in a thermocouple, thermoelectric power, applications of thermoelectric effect. 8. Modern Physics : Artificial radioactivity, artificial transmutation, nuclear reactions and q-value. Types of nuclear reactions, structure of nucleus , nuclear constituents, proton-neutron theory, general properties of the nucleus. Atomic mass unit, mass Defect and Packing fraction. Nuclear binding energy , nuclear forces, nuclear models. 9.Nuclear fission : Theory of nuclear fission, energy released in nuclear fission, the chain reaction, thermonuclear reactions, atombomb, stellar energy, nuclear reactors. 10. X-rays : Discovery & production of x-rays, origin and properties of x-rays, diffraction of x-rays, Bragg's law, x-ray spectrometer and crystal structure, power method, applications of x-rays. Waves types standing waves, interferences, diffraction.

References: 1. Engineering Physics-R.K.Gaur & S.L.Gupta 2. Physics part-II- D.Halliday & Resnick 3. Introduction to classical and -J.R.Meyer Arendt. modern optics 4. Modern college physics-H.E.White. Affiliated East-West Press.

AMT 1101 : APPLIED MATHEMATICS I

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Total	:	100

1. Calculus : Applications of darivatives, curvature, successive dervaties, Deibnitz Rule for the dervatives Rolle's theorem. Mean value therorem, Expansion of functions. Taylor's Expansion with Reminder From Indeterminant forms, L'Hospital's Rule Concept of Partial derivatives, Complex Number Ds Moiver's theorem and its applications, Hyperholic, Expinsntial and Logarithmic functions. Infinite series-tests for convergence. 2. Differential Equations : Formation of differential equation form a given solution. First order first degree differential equation with it 's applications. Linear differential equations of higher order with its applications. The differential equation with variable coefficients. Method of solution in series. Simultaneous differential equation.

MEC 1101 : ENGINEERING DRAWING-I

Theory	:	3 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	4 Hrs.	Total	:	150

1 Plane grometry, types of lines, lettering, geometrical construction, tracing or curves. 2 Plane Geometry, projection of points, lines and projection on anxillary planes. 33.Orthographics projection and I semestric of machine parts including sections. 4Threads, bolts, studs, nuts set screws split pins, rivets, shafts, pulleys, foundation bolts, standard rolling sections. 5Cotter joints, kundkle joint, rivetted joints, welded joints and couplings.

MME 1101 : MATERIAL SCIENCE

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Total	:	150

1. Engineering requirments of materials :Criteria for selection of materials for engineering applications on the basis of chanical,electrical,thermal and chemical properties. 2. Structure of materials :Atomic bonding. different types of bonds and coordination. Crystal structures, allotropism, crystalline and amorphous structure. 3. Metallic Materials :Properties and applications, imperfections in crystals, elastic and plastic deformation of metalic materials, cold working and properties of single phase and two phase materials. 4. Ceramic materials :Examples of ceramic materials,Bricks, concepte,cement, refranctories and glasses. Structure,properties and applications of above materials.5. Organic Materials :Polymerisation mechanicsms, hydrocarbon and polymer structure. Deformation and other behaviour of polymers. Properties and application of plastics, rubber, resins and wood. 6. Composite materials :Cermats and powfer metallurgy product their preparation, properties and uses.
7. Electrical and magnetic materials, Electrical properties Electrical conductivity, conductirs, inslylators and semi conductors. Magnetic behaviour soft and hard magnetic materials. Dielectric properties. 8. Stability of materials in servies environment. Corrosion, oxidation and thermal stability. Protection against corrosion.

CVL 1101 : FUNDAMENTALS OF CIVIL ENGINEERING-I

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	3 Hrs.	Total	:	150

A) Enginering materials :

1.(a) Stones: types and classification of stones - characteristivcs of good stones - choice and uses of stones. (b) Bricks: classification of bricks - factors affecting quality of bricks - characteristics of good bricks - As per ISI specifications - Field bests of bricks -special forms of bricks - Bricks for special purposes like refractory bricks. 2.(a) Lime : Classification of lime - characteristics of good lime - slaking process of lime - I.S. specification of lime (b) Cement : Basic ingrediant of ordinary cement - Physical properties of cement, Field examinations of cement - storing of cement - veriseties of cement and, its uses- I.S. specification of ordinary cement. 3. Mortar and concrete : Specifications of ingrediants for mortar and concrete, classification of mortar and concrete - selection of mortar and its uses. Production and quality control of concrete, Physical properties of concrete. Functions of ingredients, Coarse aggregate and Fine aggregate – Fly ash in cement and its effects. 4. Timber : Characteristics of good timber - Importance of seasoning of timber, Requirements of good preservations. 5. Plastics, Steel & Glass : Basic types of plastics - physical & mechanical, properties of plastics - uses of plastics in various engineering field - uses of steel - properties of mild steel - market forms of steel - composition of glass, properties and uses of glass - special varieties of glass.

B) Surveying :

6. Introduction : Principle , role of survey , classification , basic instruments in linear and angular measurements , chain, tape, compass, uses , field work and notes , survey drawings, conventional symbols , scale. 7. Levelling : Temporary adjustments , field work , computation of levels , arithmetic checks ,

C) Building construction : 8. Basic components of building and their functions

D) Introductory environmental engineering : 9.Terminology: Air, water and land pollution , introduction to various type of pollution and remedial for control , ecology, environmental protection and leqislation , water & waste water quality criteria , disposal of wastes.

Termwork : Termwork will consist of practicals, drawings and sketches based on the above topics of the subject.

References:1) Engineering Materials – S.C. Rangwala 2) Engineering Materials – R. K. Rajput 3) Concrete Technology – M. S. Shetty 4) Building Materials – Surendra singh 5) Material of construction – D. N. Ghose 6) Elementry Survey – B. C. Punmia 7) Surveying and leveling – S. C. Rangwala 8) Introduction to environmental engineering and science – Gilbert M. Masters

MEC 1102 : WORKSHOP - I

Theory	:	3 Lectures	Marks(Theory)	:	0
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	3 Hrs.	Total	:	50

S.S. BE-I

AMT 1201 : APPLIED MATHEMATICS II

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Total	:	100

1. Practical Derivatives : Functions of two variables, limits. continuity and Derivatives. Euley's theorem, chain Rule. Implicit functions, Differentials. Applications of pratical derives : Tanget plane and Normal Line. Approximataion, Maxima-Minima, Lagrange's Multiplier's method. Envelopes. 2. First Order Partial diffrential equation. 3. Vector Calculus : Gradient of a scalar function. Directional derivative. Divergence and curl of a vector field and its applications. 4. Analytic solid grp.ryty : Plane, Sphere, Cone, Cylinder, Conicoids. 5. Tracing of conics : Cardioid; cycloid, Lemniscase, Spirals, Four leaved rose etc. 6. Matrices : Revision, Rank of a Matrix, Solution of algebraic Liner equations : equations in N unknows. Eigne values and Eigenvectors. Bilinear, quadratic, Heritian and skew Herhitian forms. Eigen values of Hermitian, Sknew-Hermitian, unitary matrices. Bounds of Eigness Values.

MEC 1205 : ENGINEERING MECHANICS

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

1. Coplanar force systems : Coplanar forces. Resultant of concurrent and non-concurrent forces. Resolution with couples. graphical methods. 2. Equilibrium of forces : Free body diagram. support reactions. equations of statics. graphical methods. forces in members of simple trusses. 3. Properties of Lines, Area and Solids: Centroid of linesand plane figures. moment of inertia of plane figures. transfer theorm. product of inertia. C.G.of rigid bodies. 4. Equilibrium on a rough inclined plane. The wedge-the sacrew-the screw jack. simple lifting machines. power transmission in belt drives. gearings.trian of wheels. epicyclic gearing. 5. Simple stresses and strains : Hooke's law.elastic limit, ultimate stress. factor of safety. Lateral strian. poission's ratio.temperature stress. simple shear.proof stress. Elastics-moduli-relation-principal stresses. strain energy.
6. Thin cylindrical and spherical wheels: Analysis and design 7. Riveted and design 8. Analysis and design 9. Determination of internal forces in beams and shafts. bending/twisting moment diagrams.
Termwork : The item work will be based on the above sylabus and shall consists of (I) Laboratory experiments, and (ii) Graphic statics.
References : 1. Elements of applied mechanics :S.B.Junarkar 2. Materials and structures:S.B.Junarkar 3. Applied Mechanics:R.S.Khurmi 4. Strength and materials:R.S.Khurmi 5. Applied Mechanics: Ramamrutham

APH 1201 : APPLIED PHYSICS II

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	3 Hrs.	Total	:	150

1. Velocity of De-broglie waves. wave and group velocity. group velocity and particle velocity. Heisenberg's uncertainity principle. probability concept. Schrodinger's wave equation. Infinite square well. the free particle. generation of infinite square well in three dimension. penetration of potential barrier (tunneling in tunnel diodes) 2. Statistical mechanics. free electron theory of metals. the band theory of conduction electrons. 3. Conductivity of metals. Ohms law and relaxation time of electronics. Relaxation and collision time. mean free path. electron scattering and resistivity of metals. superconductivity and applications. 4. Mechanism of conduction in semiconductors. the chemical bond in Si and Ge and its consequences. the density of carriers in instrinsic semiconductors..the energy gap. the conductivity of the intrinsic semiconductors. carrier density in n and p type semiconductors. 5. Minority and majority carier densities in semiconductors. Drift currents and diffusion currents. Continuity equation for minority carriers. 6. Fibre optics. Principle (meridonila ray analyses). types of fibres.characteristics of fibre. mode dispersion. color dispersion. numerical aperture. attenuation. communication line. 7. Lasers. He-Ne laser. carbon dioxide laser. ruby, Nd:Yag and semiconductor lasers. Argon ion lasers. applications. 8. Thin films. Production of thin films. vaccum evaporation technique and epitaxial growth (V.P.E.L.P.E.&M.B.E.) application-solar cell,infrared detector.thin-film transister. 9. Electron optics.motion in electric field. force acting on a charged particle. The analogy between the motion of the charged particles in electrostatic field and propogation of light beams in trasnspaent media. centered electrons-optical system. the basic equation of electron optics for axially symmetric fields. focussing in axially symmetric fields. the Helmholtz-Lagrange equation. the thin lens.electron multiplier. 10. Motion in a magnetic field;motion in uniform magnetic field.axially symmetric agnetic fields.short coil focussing.the electron microscope.motion in slowly varying magnetic fields.focussing electric and magnetic field.strong focussing. Motion in combined fields:motion of charged particles under effect of a uniform electric and uniform magnetic field. a general desciption of the motion of charged particles in combined fields. electromatic seperation of isotopes.
References: 1. Introduction to atomic and nuclear physics: H.Semat & J.R.Albright 2. Motion of charged particles in electric and magnetic fields:L.A.Artsimovich & S.Y.Lukvanov 3. Electrical Engineering materials :A.J.Dekker 4. Introduction to classical & modern optics :J.R.Mever Arendt

ELE 1206 : ELECTRICAL ENGG. AND MACHINES

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

A.ELECTRIC CIRCUITS **:** 1. D.C.Circuits : Review of Ohm's law. Kirchoff's laws. Series parallel connections.Solution of simple d.c.circuits. 2. A.C.Circuits : Sinusodial e.m.f. and currents R.M.S.Value Phaser representation. Voltage and their combination. Power and power factor. Polyphase system : Voltage and current relation and power inbalanced 3 phase system.
B.ELECTRICAL MACHINES **:** 3. D.C.Characteristics : Principle of working. Types of generators. Their characterics and application. D.C.Motors : Principle of working. Types of motors. Their characteristics & applns. 4. Transformers : Review of Faraday's law and Lenz's law. Self and mutual induction. Principle of working of transformer. EMF equation. Uses of

tranformer. 5. A) Alternators : Construction,EMF equation,Regulation. O.C.and S.C.test. Synchronization of alternators. B) Sync. Motors : Principle of working. Methods of starting "V" characteristics. Appln. of sys.motors.
Termwork : About 8 to 10 experments based on the above syllabus.
REFERENCES :1. Applied Electriucity-H.Cotton 2. Electrical Technology -B.L.Thareja 3. Advance Electrical Technology-H.Cotton 4. Problems in Electrical Engg.- Parker Smith

CSC 1201 : STRUCTURED PROGRAMMING AND UNIX

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	3 Hrs.	Total	:	150

Prerequisites:- Computer Fundamentals.
Objectives:- Students should have an understanding of the basic working of a computer when they begin this course.
This course aims to enable students to understand and implement structured programming concepts and the fundamentals of working of the Unix operating system. System level programming using pointers and handling data structrus through the use of structures, unions, etc are also elucidated. After the completion of this course, students will be equipped to undertake projects in C and to work in the Unix environment.
STRUCTURED PROGRAMMING 1 Fundamentals: Programming, Higher level languages, Operating system, Compiling programs. 2 Programming in C Language: Foundation of programming, variables, constants, data types, Operators, Expressions and Assignment Stetements , Control statements, Console Input/Output, Arrays, Functions, Pointers, Structures, Unions and Ennumerated Data Types, File Handling, The C Preprocessor, Header File And Standard Library Functions
UNIX 1 Introduction : History of Unix, types of OS, features of Unix, Parts of Unix. 2 Unix file system and its physical representation.3 Security and accessibility. 4 Commands 5 Administrative commands 6 Additional features : I/O redirection, piping. 7 Shell scripts.
REFERENCES : 1 Stephen Kochan- Programming in C 2 Kernighan & Ritchie -C Programming 3 P. Kanetkar-Let Us C 4 P. Kanetkar-C Pointers 5 Sumitabha Das-UNIX - Concepts and Applications 6 Stephen Prata -Advanced Unix Programming

FS BE II

AMT1301 : APPLIED MATHEMATICS III

Theory	:	3 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Total	:	100

1.Multiple Integrals : Reorientation of concept integrals, line integrals, double & triple integrals, evaluation techniques, change of order of integration, integrals in polar & cylindrical co-ordinates, transformation of multiple integrals, application of double & triple integrals for evaluation of area, volume, mass. 2 Vector Calculus : Surface integrals, Green's Theorm, Gauss Divergence Theorm, Stoke's Theorm, application of integrals theorm. 3 Introduction to Fourier Series & Walsh Series :Fourier expansion of periodic functions with period 2#, fourier series of even & odd functions, half range series, fourier series of functions with arbitrary periods, conditions of convergence of fourier series. Walsh Series, Walsh Functions & their applications. 4 Fourier Transforms and discrete fourier transforms :Fourier transforms, fourier sine transforms, fourier cosine transforms, linearity property, fourier transforms of derivatives, convolution theorm, applications. Discrete fourier transforms, inverse discrete fourier transforms & their properties, fast fourier transform algorithm. 5 Special Functions : Properties of Bessels Functions & legendre polynomials, examples of differential equation leading to Bessels Functions & legendre polynomials.6 Functions of Complex Variables : Limit, continuity & derivative of functions of a complex variable. Analytic functions & applications; harmonic conjucate harmonic & potential function. Complex integration, line integrals, Cauchy integrals theorm, Cauchy integrals formula.

REFERENCES: 1. Advanced Engg. Mathematics : Erwin Kreyszig, John Willey & Sons 2 .Introduction to Partial differntial: Donald Greens Span 3. Advanced Engg. Mathematics : C.R. Wylie

AMT1302 : COMBINATORIAL METHODS

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Total	:	100

1. Stanot & Macallister, Discrete Mathematics: Chapter 1 Mathematical Reasoning, Propositional predicaters calculus & program verification.
2. Graphs, Pattrs & Circuits, Trees & Fundamental Circuit, Planarity of Graphs. Chapters 1,2 and 3 and sections 5-1 to 5-4 in chapter 4 of book 'graph theory' by Narsingh Deo. 3 Boolean algebras, Sections 3.1,3.2,3.3,3.4 and 3.5 of chapter 2 of book 'Discrete Mathematics, Au by S A Wiitala. 4 Uses of induction method as given in section 1.5 of 'Elements of Discrete Mathematics' by C L Liu.

ELE 1311 : ELECTRONICS ENGINEERING-I

Theory	:	3 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	4 Hrs.	Total	:	150

1.Diodes as Circuit Elements: Half wave and Full wave rectifiers, Ripple factor, efficiency of rectification, Filters, L-type input and L-type filters. 2 Bipolar Junction Transistors: Operation of the Bipolar Transistor, circuit model for low speed, active region operation, the trnsistor as an amplifier, CB and CE configurations, cut-off and saturation region, typical values of junction voltage & current gain, CC configuration. 3 Bias Stability: Bias stabilization of operating point, various stabilizing circuits, fixed bias, collector to base bias and self bias circuits and their analysis, Stability factor, thermal stabilization & compensation schemes. 4 Power Amplifiers : Class A Amplifier with resistive load, transformer coupled load, drawbacks of Class A Power Amplifier, Class B push pull amplifiers, selection of R-L from maximum power output, type of distortion in Class B push pull, its minimization, complimentary, symmentry and quasi-complimentary symmentry class B amplifier, introduction to class C amplier. 5 The hybrid models and determination of incrementals parameters, hybrid models, variations of hybrid parameters with voltage, current & temp. measurement of incremental parameters, validity of hybrid model, transistors at high frequency, single stage transistor amplifier response at L.F., for all three configuration, selection of external capacitors, CE amplifier response at high frequency, gain bandwidth product, HF response of CE. 6 Elementary treatment of amplitude & frequency modulation & demodulation, basic circuits for modulation & demodulation.

REFERENCES: 1. Integrated Electronics :Millman and Halkias 2. Micro Electronics:Millman and Grebel 3. Applied Electronis :Mithal

CSC1301 : OBJECT ORIENTED PROGRAMMING

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites: 1. Procedural programming 2. Structured programming

Objectives: This course requires the students to have some prior experience in programming. The object oriented programming paradigm is introduced through this course and the implementation of those concepts in C++ are taught along. With their knowledge in this subject the students will be better prepared to handle courses in Windows Programming and Object Oriented Analysis and Design.

OOAD **:** 1. Introduction to Object Orientation and Object Oriented methodology. 2. Basic concepts of Objects, Classes, Encapsulation, Inheritance, etc. 3. Object modelling concepts, links and Associates among classes. 4. Generalization Specialization relationships, Inheritance Aggregation relations, Multiple inheritance. 5. Object relationship diagrams, Cardinality constraints, Subtypes / Subclasses and association, Abstract classes metadata. 6. Dynamic modelling and state diagrams, Events and states, State lifecycles, operations, Nested state diagrams, concurrency of operations. 7. Functional modelling in Object Oriented environment, Data Flow Diagrams specifying operations, constraints and identifying controls. **C++ :** 1)Introduction to the concept of Object Oriented Programming, The need for Object Oriented approach and comparison with the structured (procedural) programming approach, The basic principles of an object oriented programming language 2)Basic Programming in C++, Basic Data Types of C++, Operators in C++ and building expressions, Program control structures, Writing functions in C++, Significance of function prototype and definition, Storate classes and scope rules, Scope resolution operator, Inline functions,Functions with default arguments,Function overloading, Pointers, Arrays and References, Call by value, Call by

reference 3) Object Oriented concepts in C++, Concept of encapsulation and abstraction, Implementing them through classes and structures 4)Static Polymorphism, Function overloading, Operator overloading, Binary operators, Unary operators 5) Data conversions, Basic and user-defined, Between two user-defined objects, 6)Inheritance, The need for inheritance, Base and derived class specification, Access specifiers with respect to inheritance, Types of inheritance, Multiple , Mutli-level, Hybrid, Overriding of functions, Composition, Composition vs Inheritance 7)Runtime Polymorphism, The need for runtime polymorphism, Virutal Functions, Abstract base classes, Virtual base classes, Virtual destructors 8) Input and Output in C++, Console Input and Output, File processing in C++, 9)Templates, The neeed for templates, Function templates, Class templates, Templates and inheritance, 10)Exception handling, What is exception handling?, The syntactical elements : try, catch and throw, Rethrowing, Exception Specification, Stack unwinding, Processing failures in memory allocation through 'new'11)Advanced features, Casting operator , static_cast, reinterpret_cast, const_cast, Namespaces, RTTI, type_id, dynamic_cast, explicit constructors, mutable data members

REFERENCES :1.C++ - How to Program 2 -Dietel and Dietel 3Programming in C ++ : Robert Lafore 4 Let Us C++: Yashvant Kanitkar 5 Object-Oriented Modeling & Design :James Rumbaugh & others

ELE 1314 : THEORY OF NETWORK LINES

Theory	:	3 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	4 Hrs.	Total	:	150

1Series and parallel Response. : Coupled circuits. : Mesh and Nodal Analysis 2 Two terminal pair networks : Interconversion of two-port parameters, direct reverse and reverse odd interconnections. Deviation of Brune's validity tests. Equivalent circuits. 3Filters : Image and characteristics impedence. Image prepagation functions. The bisection theorm. Constant - K and m-derived filters. Alternators, equalizers and pads. 4Transmission Lines : Distributed inductance and capacitance. Wave equation,voltage and current distributions, phase velocity. Reflection and standing wae. Lossless transmission line equation. 5Transmission line with lossness. Complex parameters, equivalent limped networks. Determination of parameters from impedence measurements. Distortion. Loading,disparsion and group velocity. 6 High frequence Transmission lines. Impedence and admittance of short circuited and open circuited line of resonant lines. Mismatched receiver impedence. Impedence transformation by quarter wave lines, and stubing. Application of the smith chart.Double - stub - matching.

REFERENCES : 1. Network lines and fields : John D Ryder

ENG 1301L : ENGLISH

Theory	:	0 Lectures	Marks(Theory)	:	0
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	50

SS BE II

AMT 1403 : APPLIED MATHEMATICS IV

Theory	:	3 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Total	:	100

1.First order partial differential equation : Models of engineering problems leading to first order partial differential equation, lagrange's equations, special types of I order partial differential equation. 2 Second order partial differential equation :Second order partial differential equation , models leading to second order partial differential equation . Boundry value problems involving second order partial differential equation and their solution by methods of seperation of variables. Heat, wave and laplace equation and their solution by methods of seperation of variables and using fouriers series. 3 Laplace Transforms :Laplace Transform of Dirac Delta function , unit step function , convolution theorm , application of Laplace Transforms to the solution of ordinary and partial diff. equation.4 Transformation and Conformal mappings :Linear transformation of complex domain , some special transformation , by bilinera transformation , transfomation by some standard functions , conformal mapping , application of transformation and conformal mapping. 5 Difference equations :Formation of Difference equations , Solution of linear first order and second order Difference equations . 6 Introduction to theory of algorithm :Problems and instances , algorithm , characteristics of algorithm , concept of test data, efficiency of algorithm , theoritical empirical and hybrid approaches to measure efficiency, time complexity , space complexity, asympotic notations , solving recurrences using characteristic equations , example of simple algorithms and their analysis. 7 Algebraic structures :Binary relations and their properties, partial ordering , partially and totally ordered sets , Hasse diagrams , Glb and lub of subset of a poset. Lattices, properties of lattices , complete, uncomplemented and distributive lattices. Boolean algebra nad boolean functions, algebraic system and their properties , semigroups , monoids,homomorphisms, subsemigroups and sub monoids. 8 Groups :Definitions and examples , sub groups and homomorphism, left and right cosets, normal subgroups.

REFERENCES : 1. Advanced Engg. Mathematics: Erwin Kreyszig, John Willey & Sons 2. Introduction to Partial differntial: Donald Greens Span 3. Advanced Engg. Mathematics : C.R. Wylie 4. Discrete mathematical structures : J P Tremblay and Manohar 5. Discrete mathematical structures : B kolman and R C Busby for comp. sc.

CSC1402 : ADVANCE CIRCUIT ANALYSIS

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	4 Hrs.	Total	:	150

1Analysis of multiple networks : 1 Properties of indefinite admittance matrix and its use for calculation of network functions with OP AMPs and for rotation of terminals . 2 Topological analysis : Network graphs , trees,ditsots and F- circuits : Tellegen's theorm , proper tree; tie-set , cut-set and incidence matrices ; branch parameter matrices ; kirchoff's equations on loops and nodal basis, dual and reciprocal networks. 3 Signal analysis in the frequency domain :Steady state responce of networks , with a nonsinusoidal periodic excitation using fourier series , power spectrum of periodic signals . The methods of laplace transformation and its use for obtaining the complete response of general RLC circuits ; The delayed unit-step functions,singularity function,wave form synthesis , steady state response of networks to periodic nonsinusoidal excitation using laplace transformation. Fourier integral and transform relationship of fourier and laplace transforms ,spectrum envelopes for a recuring pulse. 4 Network Functions :Complex frequency, transformed circuits and impedence network functions for one-port and two-port networks ; poles and zeroes; phase vector method for obtaining the frequence response ; determination of OCNFs and SCNFs of a network ; natural response and five characterstics polynomials of a 2-port network : properties of driving point imdence functions, typical reactance curves for lossless one ports : Cader and Foster's time domain realization methods. 5 Active Networks :Gyrators, NICs , time domain behaviour and stability properties of NICs , FDNR types of scattering variables representations, and their interrelationship. 6 Network transmission characteristics :Frequency and magnitude scaling , Elmore's parameters for evaluation of the response of filters and amplifiers ; butter worth and chebyshev filters, bessel's function, all pass filters, frequency transformation.

REFERENCES : 1. Modern Network Analysis: Reza and Sealy 2. Network Analysis: Seshu and Balbanian

ELE 1403 : ELECTRONICS ENGINEERING II

Theory	:	3 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	4 Hrs.	Total	:	150

1.Logic Gates :Characteristics of logic gates , saturating and nonsaturating gates , delay times , power dissipation , fan out etc. Families of logic gates such as DTL , HTL , TTL , RTL , DCTL etc. and comparisons of logic families .2 Feedback theory :Positive and negative feedback concepts, characteristics of -ve feedback , effect of -ve feedback on bandwidth , noise , distortion , stability etc. Classification of feedback amplifiers , gain , input and output impedence in feedback topologies . 3 Oscillators :+ve feedback and stability , Barkhausen's criterion , feedback oscillators , generalized oscillators, Colpitt's oscillators , RC phase shift and wein bridge oscillators , crystal oscillators .4 Differential and operational amplifiers : Common mode and differential signals , differential amplifiers , common mode rejection ratio, cascaded different amplifiers, use of current sources in differential amplifiers, the ideal operational amplifiers and its properties. Types of operational amplifiers block diagrams and specification of typical OPAMPs . 5 Applications of OPAMPs.Use of OPAMPs as sign changers , inverting and noninverting adders, differentiators , integrators , logarithmic buffer , ample and hold , V to I and I to V convertor, precision diode , precision rectifiers , instrumentation amplifiers etc. 6 Analog integrated circuits :Comparators , timers , wave form generator circuits , four quadrant multipliers , analog switches , ample and hold , typical IC s and their applications.

CSC1403 : COMBINATIONAL AND SEQUENTIAL CIRCUITS

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites: Computer Organization

Objectives: The students must have knowledge of basic organization and functioning of a computer. In this subject they learn the basic designing of logic circuits in a computer. After completion of this course, students can design the basic combinational and sequential circuits of a computer.
1 Number systems 2 Logic gates 3 Switching algebra 4 K-map 5 Tabulation procedure to simplify the switching expression 6 Flip-flops 7 Registers 8 Counters 9 Finite state machine 10 Synchronous & asynchronous sequential circuits 11 Design of sequence detector
REFERENCES :1. Switching and Finite Automata Theory - Zvi Kohavi 2. Digital Computer Electronics - Malvino

CSC1404 : DATA STRUCTURES

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva):	50	
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : Structured programming
Objectives : Understanding of a structured programming language is required for the student to appreciate and understand the different data structures that can be used during programming. This subject discusses different data structures , their complexities and applications as compared to time and space management. After studying this subject the students will be able to decide which data structure is best suited for any given application.
1) Introduction & Overview, Introduction, Basic Terminology; Elementary Data Organization, Data Structures , Data Structure Operations, Algorithmic notations, Complexity of Algorithms 2) Overview of String and Array 3) Linked Lists – Introduction, Linked Lists, Representation of Linked Lists in Memory, Various Operations on Linked Lists, Two way Lists, Circular Linked Lists, Applications of Linked Lists 4) Stacks – Introduction, Stacks, Array Representation of Stacks, Application of Stacks 5) Queues – Introduction, Definitions, Representation using arrays and Linked Lists, Circular Queues, Deques, Priority Queues, Application of Queues 6) Trees – Terminologies, Definition & Concepts, Binary Trees, Reprenting Binary Trees in Memory, Traversals and Other Operations on Binary Trees, Threaded Binary Trees, Binary Search Trees, Heap Trees; Heap Sort, Height Balanced Binary trees (AVL Trees), Weight balanced Trees (Huffman Tree), General Trees, B-Trees & B+ Trees 7) Graphs – Introduction, Representing Graph in Memory, Traversing and Searching, Applications of Graphs 8)Sorting and Searching – introduction, insertion sort, selection sort, bobble sort, merging, merge-sort, quick sort, radix sort, searching and data modification 9) Hasing – hash tables, hashing techniques and functions, collision resolution techniques – open addressing & chaining 10) File Structures – types of files and their processing methods
REFERENCES : 1. Introduction To Data Structures: Tremblay & Sorenson (TMH) 2. Data Structures: Lipschultz (Schaum Series)3. Data Structures using C: Robert Kruse (PHI)4. Classic Data Structures : D. Samanta (PHI)

ELE1514 : ANALOG AND DIGITAL COMMUNICATION

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	3 Hrs.	Total	:	150

1.Modulation :Need and advantages of modulation,amplitude,frequency and phase modulation amplitude modulation waveforms and expressions for modulated signal. Index of modulation, power in modulated signal,spectrum of modulated signal, types of amplitude modulation, amplitude modulators & detectors, IC balanced modulator and its uses. 2.Angle Modulation :Frequency and phase modulation, expressions,modulation index and waveforms, bandthwidth and spectra of frequency modulation. Frequency modulators and detectors. Phase locked loops and their applications. 3 Pulse Modulation :Sampling theorm and sampled waveforms. Recovery of signals after sampling,effect of aliasing and interpolation distortion. Pulse position and pulse width modulation,time division multiplexing. 4 Digital modulation :PCM and delta modulation.encoding of digital signals, clock recovery,digital multiplexers. framing and synchronisation. bit stuffing and elastic store. base-band PCM transmitters and receivers. 5 Analog transmission of digital signals :Communication media such as two-wire line, twisted pair, coax cable,fibre optic cable. amplitude,frequency and phase shift keying, QPSK, QAM, MFSK, MPSK and other multi-level transmission techniques. Transmitter and receiver block diagrams for each modems. 7 Propogation and noise : Space wave and sky wave propogation, satelite channels, etc. and their properties. types of noise, interference, crosstalk , dispersion and other phenomenon which affect accuracy of digital transmissions. Minimization of these effects.

CSC1503 : DESIGN AND ANALYSIS OF ALGORITHMS

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	0
Practicals	:	0 Hrs.	Total	:	100

Prerequisites : Data Structures

Objectives : To study the working and designing of a database and study the advantages of a DBMS as compared to a 3rd Generation Language. An insight into the different types of databases like relational, object-relational, object-oriented, hierarchical etc. is also to be covered. 1. The Role of Algorithms in Computing: Algorithms as a technology, analyzing algorithms, designing algorithms. 2. Recurrences: substitution method, recursion-tree method, master method. 3. Probabilistic Analysis and Randomized Algorithms: the hiring problem, indicator random variables, randomized algorithms, probabilistic analysis. 4. Dynamic Programming: assembly-line scheduling, matrix chain multiplication, elements of dynamic programming, longest common subsequence, optimal binary search trees. 5. Greedy algorithms: an activity-selection problem, elements of greedy strategy, Huffman codes, greedy methods, task-scheduling problem. 6. Amortized Analysis: Aggregate analysis, accounting method, potential method, dynamic tables. 7. NP Completeness: polynomial time and verification, NP completeness, reducibility, proofs and problems.

REFERENCES : 1. Thomas Cormen, Charles Leiserson, Ronald Rivest, Clifford Stein: Introduction to Algorithms. 2. J. Kleinberg & C. Tardos
(Pearson Edu.): Algorithm Design

CSC1502 : COMPUTER SUBSYSTEM AND PERIPHERALS

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : Combinational and Sequential Circuits

Objectives : To begin this course, students must have knowledge of design of combinational and sequential circuits. This subject introduces design of circuits using MSI and LSI methods. This course will enable students to analyse and understand the design of a simple computer.

1.Codes,code-conversions 2 Complement arithmetic 3.Adders & Subtractors 4 Binary Parallel Adder, Fast adder, Multipliers, Squaring circuits, magnitude comparator, 5 Multiplexers, Demux 6 Encoders-decoders 7 ROM,PLA,PAL 8 Design of combinational circuits using MSI & LSI 9 Design of simple computer 10 Design of ALU 11 Design of Accumulator 12 Control Logic Design 13 Computer peripherals

REFERENCES : 1. Digital Logic & Computer design :Morris Mano 2. Switching & finite Automate theory : Zvi kohavi 3. Digital computer Architecture:Morris Mano 4. Computer Organisation:Hamacher, Vrasenic, Zaky 5. Computer Organisation & Design: Patterson & Hennessy

CSC1501 : OPERATING SYSTEM

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : 1. Computer Organization 2. Microprocessors 3. Systems Programming

Objectives: The course assumes students to have reasonably good knowledge of working of microprocessors and computers. Students should be able to appreciate various features of operating systems and evaluate critically their suitably in a given nvironment. They may also work on the projects for development of an operating system. Systems including various peripherals and assembly programming. 1.Overview of system software & Operating Systems. Development of Operating Systems. History of evolution from monolithic systems to layered systems, resident monitors to multiuser, multitasking systems. Types of Operating Systems. 2.Operating System views of machine designers, system programmers and users. Requirements and functions of an Operating Systems. Operating System objectives and environment. Operating Systems and user interface. 3.Process management Functions in a single process and multiprocess environment. Process model and state transitions. Process scheduling. 4.Design issues of Concurrent processing systems. Race Conditions and Deadlocks - Issues and Solutions.

Interprocess communication and synchronization. 5.Memory management : Contiguous & Non-Contiguous allocations. Virtual Memory management. Instruction interruptability in Virtual Memory. Different schemes of memory management. 6.File information management and file systems. File System funtions. Directory organizations. Space management of File System. 7.Student's Assignment : Study of a single user and multiuser Operating System.

REFERENCES :1. Operating Systems :Madnick & Donovan 2.Operating Systems Principles:Hansen Per Brinch 3.Design of UNIX Operating Systems: Bach M. 4.Operating Systems Principles:Milan Milenkovic 5.Operating Systems Design & Implementation :Andrew S. Tanenbaum

CSC1504 : ENGINEERING ECONOMICS & WORKS MANAGEMENT

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Total	:	100

1.Demand Analysis :Demand functions - Demand curve, etc ., Measures of responsiveness of demand to changes in price, income, etc .,determinate and uses of elasticity of demand. 2.Cost and Output :Short run average Cost curve - divisibility and adaptability - Break even analysis delements of manufacturing costs. 3 Market structure and the theory of prices 4.Pricing practices :Cost plus pricing marginal / incremental analysis in pricing multiple product pricing 5.Depreciation :Factors governing depreciation method of depreciations tax considerations. 6.Theory of capital Interest and annuity:Relationships with their applications; scriple inter cotpresent worth analysis- annuities equivalence comparision of alternatives. 8.Economic Analysis of projects in public sec or and Benefit - Cost analysis.

CSC1604 : RELATIONAL DATABASE MANAGEMENT SYSTEM

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : Any programming language, data structures

Objectives : To study the working and designing of a database and study the advantages of an RDBMS as compared to a DBMS or a 3GL tool. A project is undertaken to study a front-end and back-end tool related to a RDBMS.

1.DBMS Objectives And Architecture:Data management activities, desirable features, earlier methods and their limitations, data independence, objectives of DBMS, 3-schema architecture, DBMS languages, brief history of DBMS. 2. Introduction To E-R Model:Data model, features, E-R model: entities, relationships, their types, attributes, keys, Extended E-R Model : Aggregation, generalization. 3.Introduction To The Relational Data Model: Relational model concepts ,Domains, Attributes, Tuples, Relations, Key attributes of a relation, Relational Database Schemas Conceptual Database design, Database planning and design, Converting E-R model to tables, E.F. Codd's Rules for a Relational Database Management System 4.Theory of Relational Databases:Null values, three valued logic, Relational Algebra, Basic Operators , Selection, Projection, Cartesian Product and Joins Additional Operators, Union, Intersection, Set Difference, Division, Outer, Inner and Semi Joins, Relational Calculus Tuple relational calculus, Domain relational calculus 5.Query Languages:SQL : SQL Data Types, Nulls in SQL2, Data Definition Language (DDL) i.e. CREATE, ALTER, DROP etc., Data Manipulation Language (DML), UPDATE, DELETE, INSERT, different queries : simple and nested, aggregate functions, grouping, ordering, Constraints, Assertions Views 6.Theory Of Normalization Need and sefulness of normalization, principles of good design, Repeating groups and 1st Normal Form (1NF), Functional dependencies and 2NF, ransitive dependencies and 3NF, details of Boycs Codd's normal form, Multivalued dependencies and 4NF, Join dependencies and 5NF 7. Details Of The Working And Features Of Oracle Rdbms What is ORACLE, The role of Data Base Administrator, File Structure, Tablespace and segments, Memory Structures Transaction Control, Consistency and Concurrency, Database backup and recovery 8.Brief description of Hierarchial Database Management System and Network Database Management System Practical work :Study and Work on a RDBMS e.g. ORACLE and work in detail on the utilities available like screen painters, report writes, embedded SQL Programs etc.

REFERENCES : 1. H.F. Korth & A. Silberschatz :Database System Concepts 2. Elmasri & Navathe:Fundamentals of Database Systems 3. James Martin:Computer Database Organization 4. C.J. Date:An Introduction to Database Systems 5. James Perry & Joseph Lateer:Understanding Oracle 6. Ivan bayross:Oracle 7. ORACLE manuals

CSC1601 : COMPUTER ARCHITECTURE AND PARALLEL PROCESSING

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Total	:	100

Prerequisites : 1. Computer Subsystems 2. Combinational and Sequential Circuits

Objectives :This course requires the students to have an experience in design of combinational and sequential circuits. Also they must have an understanding of the functions of the subsystems of a computer. This course introduces the students to the architectural concepts that affect the logical execution of a program. This enables students to appreciate the issues concerning the design of a computer and the methods that can be adopted to optimise its working like pipelining, parallel processing. 1. Introduction to parallel processing :What is parallel processing, characteristics of multiprocessor, Inter connection structures, Time shared common bus, multiport memory cross bar switch, multistage switching network, hypercube interconnection interprocessor arbitration, system bus, serial arbitration procedure, parallel arbitration logic, dynamic arbitration algorithm interprocessor communication and synchronization, cache coherence, parallel processing applications 2. Pipelining and vector processing: pipelining, Arithmetic pipelining, instruction pipelining Vector processing, vector operation, matrix multiplication, , memory interleaving, super computers 3. Array processors: attached array processors, SIMD array processors, SIMD interconnection networks, SIMD array processor organization associative array processing 4. Data flow computers and parallel algorithm:data driven computing, control flow v/s data flow computers, data flow graphs and algo. Data flow computer architectures, static data flow computers, dynamic data flow computers parallel algo, . easy parallelism, synchronisation techniques 5. Input-output organization Accessing I/O devices, use of interrupts & DMA, I/O hardware, Standard I/O interfaces 6. Memory Cache memories, mapping functions, replacement algorithms, example of mapping techniques, examples of on-chip caches. performance considerations ,interleaving, hit rate & miss penalty, caches on the CPU chip, other enhancements, virtual memories, Memory management requirements. 7. Assessing and Understanding performance. 8. Storage and other peripherals.

REFERENCES : 1.Computer Organization :Hamachar,Zaky, Vranesic 2.Computer Architecture and Organization : J.P.Hayes 3. Computer System Architecture : Morris Mano 4. Computer architecture & parallel processing :Hwang & Briggs 5. Computer Organisation & Design :Patterson & Hennessy

CSC1605 : MICROCONTROLLORS

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : 1. Combinational and Sequential Circuits 2. Computer Subsystems

Objectives :Preliminary knowledge of design of combinational and sequential circuits is essential to start this course. The knowledge about functions and the interactions of the subsystems of a computer is also essential . This course aims to make students understand the internals of microcomputer 8031 I.C. and connecting it to external memory and I/O devices. To study the machine language programming of 8031icorcomputers and the use of machine language in solving different software programs. To study different applications using I/O I.C., programmable timer, programmable keyboard, display IC along with machine programming. To study the concepts of interrupt and Direct Memory Access (DMA).

1.Introduction to 8031 microcontroller I.C. hardware (timer, I/O and other pins), data bus, address bus, RAM, ROM, internal block diagram, etc. 2.Instruction set, program and applications 3. Chip-select decoder circuit 4. Interrupts, DMA and its controller-IC 8257 5.Peripheral Programmable Interface - IC 8255 6.Programmable Keyboard Display - IC 8279 7. Serial Synchronous/Asynchronous Receiver/Transmitter - IC 8251

REFERENCES : 1.Microprocessors Theroy and :M.Rafiquzzaman Applications INTEL & Motorola 2.The 8051 Microcontroller: Architecture,:Ayala Programming and Applications 3.Intel Microcontroller Handbook 4. Intel Peripheral Data Manual

CSC1603 : ANALYSIS AND DESIGN OF INFORMATION SYSTEMS

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Total	:	100
Prerequisites	:	Knowledge of Programming			

Objectives : The course aims at discussing the issues involved in Analysis and Design of Information Systems with central focus on the study of System Development Life Cycle.After successfully completing this course students will be able to work as System Analyst after reasonable team experience.

1. Overview of Information Systems Development, Business Sytems concepts, System Development strategies, System Development tools.

2. Overview of System Development Life Cycle, Initiation of system development projects 3. Preliminary Investigation, Requirements study and Information gathering, Determining system requirements, Tools for determining requirements, tools for documenting procedures & decisions. 4. Analysis of System tools for system analysis, Basic modelling concepts, Modelling for analysis, Data Flow Diagrams for analysis, Entity Relationship diagrams for defining Data Structures. 5. System Design, Analysis to Design transition, changing from analysis model to design model, Objectives in design of Information System, Logical to Physical design mapping, Elements of design, Identifying and including essenstial features into the design. 6. Essential requirements in design of Outputs, Inputs, online dialogues , files & controls. 7. Development and Implementation, System documents, system changeover, plane system testing, system control and audit reviews, system maintenance

REFERENCES : 1. James Senn:Analysis Design & Implementation of information systems 2. Lucas Henry C.:Information system concepts for mgmt. 3. Awad Elias M.:System analysis & design 4. Kendall & Kendall:System analysis & design

CSC1602 : GRAPHICAL USER INTERFACE & JAVA PROGRAMMING

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150
Prerequisites	:	Object Oriented Programming			

Objectives : The course requires that the students have experience in the use of object oriented programming paradigm. This is necessary so that the design of Graphical User Interfaces can be done more efficiently. The course implements GUI through JAVA. So students are also taught the basic concepts of JAVA before they learn the use of JAVA libraries for the design of GUI. On completion of this course, students will have a good understanding of the design of GUI based applications. 1. Fundamentals of GUI & Windows Programming : GUI components, Frames, Windows and Panels 2. Introduction to Java , History of Java, Advantages of Java, Structure of Java Program

3. Fundamental Programming Structures in Java, Comments, Data types, Variables, Operators, Strings, Arrays, Control Flow, Class methods

4. Objects and Classes, Introduction to objects and classes in Java, Relationships between classes in Java, Accessibility modifiers - public, package, private, protected, Working with new, this, super, Garbage collection 5. Inheritance, Introduction to Inheritance, Casting, Abstract Classes, Dynamic Method Lookup, The *Class* Class and Run Time Type Identification 6. Interfaces and Inner Classes, Difference between Interfaces and Abstract Classes, Properties of interface, The *Cloneable* interface, Top-level nested classes (Static classes), Non-static inner classes, Local classes, Anonymous classes 7. Threads, Multitasking, main thread, deamon threads, Creating threads: implementing the *Runnable* interface and extending *Thread* class, Synchronization, Thread transitions 8. Packages, java.lang, java.io, java.event, java.awt, javax.swing

9. Event Handling, Delegation Event Model,AWT Event Hierarchy, Individual Events - Focus events, Keyboard events, Mouse events, Advanced Event Handling - Consumer Events, The Event Queue, Adding Customer Events, Separating GUI and Application code 10. User Interface Components with AWT, The Model - View - Controller design pattern, Introduction to layout management, Text Input, Making Choices, Scroll Bars, Dialog Boxes, Menus

REFERENCES : 1.JAVA Developer's Guide:Jamie Jaworski 2.Core JAVA Vol - I Fundamentals:Cay S. Horstmann & Gary Cornell

3. JAVA - Complete Reference : Patrick Naughton

CSC1703 : COMPUTER GRAPHICS

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : 1. Exposure to data structures and algorithms. 2. Knowledge of computer programming and mathematics.

Objectives:Understanding the fundamental graphical operation and the implementation on a computer. Understanding the mathematics behind computer graphics, including the use of spline curves. 1.Geometry & Line Generation : Lines, Vector Generation, Bresenham's Algorithm, Character Generation etc. 2.Graphics Primitive :Display devices, primitive operations, display-file interpreter, normalized device co-ordinates, display-file structure, display-file algorithms etc. 3.Polygons :Polygon representation, algorithms, initialization, antialiasing etc. 4.Transformations :Matrices, Scaling transformations, rotation, homogeneous co-ordinates and translation, other transformations, display procedures etc. 5.Segments :The segment table, segment creation, closing/deleting/renaming a segment, some raster techniques etc. 6.Windowing & Clipping :The Viewing transformation, clipping, the Cohen-Sutherland Outcode Algorithm, Clipping of polygons, generalized clipping, multiple windowing etc. 7.Interaction :Hardware, Input device handling algorithms, event handling, sampled devices, the detectability attribute, simulating a locator with a pick a vice-versa, echoing etc. 8.Three Dimensions: 3D Geometry, 3D Primitives, 3D Transformations, Rotation about an arbitrary axis, parallel projection, perspective projection. 9.Hidden Surfaces & Lines :Back - Face removal back-face algorithms, Z - buffers, Scanline algorithms, the painter's algorithm, comparision techniques, hidden-line methods, binary space partition etc. 10.Curves & Fractals: Curve Generation, interpolation, interpolating algorithms, polygons, fractal lines, fractal surfaces etc.

REFERENCES :1. Principles of Interactive Computer Graphics: Newman W. Sproul R.F.2. Interactive Computer Graphics: Giloi W. K. 3.Computer Graphics : Harrington S.

CSC1702 : ADVANCED MICROPROCESSOR

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : 1. Combinational and Sequential Circuits 2. Computer Subsystems 3. Microprocessors

Objectives:To study different assembler directives, addressing modes and instruction set of Pentium CPU (like arithmetic, string, bit manipulation, branching,etc.). To understand subroutines and macros. Application programs in assembly language using above instructions. Study of hardware and software interrupts. BIOS interrupts for display, keyboard, harddisk, printer, etc. Understand internals of the Pentium processor and all the pipeline stages of the Pentium processor. To understand serial and parallel port of the Pentium processor and how to interface and program ardware application (e.g. A/D, D/A, etc) with Pentium processor.

1. An introduction to the Pentium Microprocessor 2. Addressing Modes, Flags and Assembler Directives 3. Data Transfer and Arithmetic instructions with programs 4. Logical and String instructions with programs 5. Bit manipulation, Program transfer and Process Control instructions with programs 6. Interrupt processing 7. BIOS interrupts INT 21, INT 10 along with functions and application programs 8. Internal detailed understanding of Pentium CPU (all pipeline stages), CPU in protected mode 9. Pentium pins and their functions 10. RISC technology and CISC technology 11. Functions of hidden files of O.S. 12. Motherboard Standards 13. Serial and Parallel ports of Pentium and their applications (e.g. Analog to Digital)

REFERENCES: 1. The Pentium Micorprocessor (PHI): James L. Antonakos ,2. Intel iAPX 386 Programmer's Reference Manual 3. The IBM PC and PS/2 by New Peter :Norton Programmer's Guide 4. The Intel Microprocessor - Architecture Programming and Interfacing (Sixth Edition): Bary B. Brey

CSC1704 : COMPUTER NETWORKS

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/w/Viva)	:	50
Practicals	:	2 Hours	Total	:	150

Prerequisites : Analog/Digital Communication

Objectives:To enable students to understand and realize how devices can be interconnected to a form a network and used for information and resource sharing.Also help them in understanding internet/intranet concepts and other contemporary networks that use wireless technologies, etc.

1.Introduction to Computer Networks, Network Architecture, OSI reference model, services, network standardization. 2.Physical Layer The heoretical basis for data communication, Guided Transmission Media, Wireless Transmission, Switching & Public switched telephone network, Mobile Telephone System, Cable Television 3.Data Link layer Design issues, error correction & detection, Elementary Data Link Protocols, sliding window protocols, Example Data Link Protocols 4.The Medium Access Sub-layer Channel Allocation, Multiple Access Protocols, IEEE standard 802 for LAN, Ethernet LAN, Wireless LANS, Broadband Wireless, Bluetooth, Data Link Layer Switching. 5.Network Layer Design issues, routing algorithms, congestion control algorithms, internetworking, network layer in the internet. 6.Transport Layer Design issues, Transport Service, Elements of Transport Protocol, Internet Transport Protocols – UDP & TCP 7.Application Layer Domain Name System, Electronic mail, WWW, Multimedia Applications. 8.Network Security Cryptography, Symmetric-Key Algorithms, Public-Key Algorithms, Digital Signatures, Communication Security, Web Security

REFERENCES: 1. Computer Networks:A. Tanenbaum 2. Data & Computer Communications :Stallings W. 3. The principles of Computer Networking : Russel D.

CSC1706 : TRANSLATOR DESIGN

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Total	:	100

Prerequisites : 1. Principles of Programming Languages. 2. Data Structures

Objectives: This course assumes the knowledge of any programming language and the need for program compilation along with the advantages and disadvantages of data structures. The course teaches the basic structure of a compiler and the construction issues of a compiler. After the completion of this course the student will be able to design a compiler.

1.Two pass Assembler 2 LEX & YACC 3 Basic sturcture of compiler 4 Lexical Analyzer, Regular Expression, Input buffering, Transition Diagram, Transition Table, Finite Automata, NFA, DFA, Regular Expression to DFA, Regular Expression to Grammar, 5. The Syntactic Specification of Programming Languages., Context - free Grammars, Derivations and Parse trees, Capabilities of Context - free grammars, 6. Syntax Analysis., Top Down Parsing, Bottom Up Parsing, Operator - precedence parsing, LR parsers, 7. Syntax Directed Translation, Syntax - directed definitions, Construction of syntax trees, S- attributed definitions and L- attributed definitions, Top - down translation, Recursive evaluators, 8. Type checking, Specification of simple type checker, Equivalence of type expressions, Type conversions, Polymorphic functions, 9. Run - Time Environments, Source language issues, Storage organization ,Storage - allocation strategies, Parameter passing, Symbol Table, Dynamic storage allocation techniques, 10. Intermediate Code Generation, Intermediate languages, Declarations, Assignment statements, Boolean expressions, Case statements, Backpatching, Procedure calls, 11. Code Generation, Basic blocks and flow graphs, Next - use information, Register allocation and assignment, Peephole Optimization, 12. Code Optimization, Principle sources of optimization, Optimization of basic blocks, Loops in flow graphs, Introduction to global data - flow analysis, Iterative solution of data - flow equations, Code - improving transformations, Efficient data - flow algorithms, Estimation of types, Symbolic debugging of optimized code

REFERENCES : 1. Principles of Complier Design: Alfred V. Aho, Jeffrey D. Ullaman 2. Compilers - Principles, Techniques, and Tools : Alfred V. Aho, Ravi Sethi & Jeffrey D. Ullman

CSC1705 : .NET Technologies

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150
Prerequisites	:	1.Object Oriented Programming	2.Networks	3.Databases	

Objectives:Students have already studied structured programming and object oriented programming using C and C++, respectively. Programming using .NET Technologies facilitates internet programming 1) An Overview of .NET & its goal - Introduction to .NET - The role of .NET Enterprise Servers - Origins of .NET - An overview of .NET Framework 2) The .NET Framework's Common Language Runtime (CLR) - The Anatomy of .NET Application - Common Type System – Metadata - Managed Data – Assemblies - Compiling Managed Code - Organising Managed Code - Executing Managed Code 3) The .NET Framework's Class Library - System Namespaces - System.Collections - Input Output – Threads – Serialization - Working with XML – Reflection - .NET Remoting – Interoperability - Windows GUI's - Enterprise Services - Web Services 4) .NET languages 5) Building Web Applications using .NET Technologies

REFERENCES : 1 Introducing .NET - Wrox Publication 2. Understanding .NET- David Chappell 3. Microsoft .NET Compact Framework (Core Reference) - A. Wigley, S. Wheelwright, R. Burbidge, R. MacLeod, M. Sutton (Tata McGraw Hill & McGraw Hill)

S.S. BE - IV

CSC1801 : ELECTIVE - I

CSC1811 : EMBEDDED SYSTEMS

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites:Microprocessors and Microcontrollers, Operating Systems, Programming Languages

Objectives:At the end of this course, students will have knowledge of the following:- Applications of real time operating systems,Applications of Microcontrollers

Introduction to Embedded Systems, characteristics of embedded systems, applications, common design metrics and design challenges.2 Processors: Single purpose and General purpose processors, their basic architecture, operations. Superscalar and VLIW architectures, application specific instruction set processors (ASIPs). Digital signal processors (DSPs), ARM processors, SHARC processors, microcontrollers. 3 Data acquisition systems DAS design 4 RTOS properties, RTOS in embedded systems, RTOS architecture, kernel, task enrolment and scheduling, task prioritization, context switching, multitasking, preemptive and cooperative inter task communication, event management, locking mechanism, interrupt handling, watchdog timer, exceptions, criteria for choosing RTOS Introduction to commercial RTOS like QNX, VxWorks from WindRiver, ThreadX from Express Logic, eCos from RehHat, Hard Hat from Mont Vista, Embeddix from Lineo, Embedded Linux, Nucleus from ATI, WinCE, Embedded NT from Microsoft 5 Device drivers, their architecture, types, implementations (Presentation) 6 Networks for embedded systems, network processors their basic architecture I2C Bus, CAN bus, SHARC link ports, Myrinet, Traffic manager and its basic architecture. 7 Embedded system design process, system design techniques, design methodologies, requirements analysis, specifications, system analysis and architecture design, Quality assurance, design example.

REFERENCES : 1 Embedded system design : A unified hardware/software introduction , Frank Vahid, Tony Givargis (Wiley publishers) 2 Computers as components principals of embedded computing system design, Wayne Wolf (Morgan Kaufmann Pub) 3 Embedded Microcomputer systems Real time interfacing , Jonnathan W Valvano (Thomsan Learning) 4 Embedded Realtime Systems Programming ,Sriram V Iyar and Pankaj Gupta

CSC1812 : ARTIFICIAL INTELLIGENCE

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150
Prerequisites	:	Computer science and mathematics., Discrete structures., Predicate logic., Programming languages.			
Objectives	:	At the end of this course the students will have learned : Representation of world knowledge using symbolic logic. Deductive strategies employed in symbolic logic. Programming in prolog. 1 Facts, Questions, Variables, Conjuctions, Rules 2 Syntax, Characters, Operators, Equality and Matching Arithmetic 3 Structures and Trees, Lists, Recursive Search, Mapping Recursive Comparision, Joining Stucture together, Accumulators, Difference Structure 4 Generating multiple solutions, The Cut, Common uses of the Cut, Preventing backtracking, Negation and Failure, Problems with the Cut 5 Reading and Writing Terms, Reading and Writing Files, Declaring Operators 7 Entering new clauses, Success and Failure, Classifying Terms 8 Treating clauses as Terams, Constructing and accessing components of structures, Affecting backtracking, Constructing Compound Golas, Equality, Input & Output, Handling Files, Evaluating Arithmatic Expressions, Comparing Numbers, Watching PROLOG at work 9 Operations on Data Structures, Representing and Sorting lists, List Processing, Representing Sets by Binary Trees, Insertion and Deletion in Binary Dictionary, Displaying Trees, Graphs, Tree Representation, Search Strategies Depth first Breadth first Best first 10 Brief Introduction to Predicate Calculus Horn Clauses 11 Declarative and Procedural meaning of PROLOG programs 12 Expert System 13 Natural Language Processing 14 Pattern Matching			

REFERENCES : 1 Introduction of Artificial Intelligence :Charniak E. 2 Artificial Intelligence :Elaine Rich 3 Artificial Intelligence :Hunt E. D. 4 Programming in PROLOG :Clockcin & Mellish 5 Introduction to Turbo PROLOG:Carl Townsend

CSC1813 : MANAGEMENT INFORMATION SYSTEM

Theory	:	4 Lectures	Marks(Theory)	:	100
Practicals	:	0 Hrs.	Total	:	100
Prerequisites	:	Organisational Structure			

Objectives : To enable students to understand concepts of management and study in detail the information systems which help the management in decision making.

1. Management Information Systems: MIS : Concept, MIS : Definition , Role of MIS, Impact of MIS, MIS and computer, MIS and academics, MIS and user 2. Information: Information concepts, - Information : a quality product, Classification of information, Methods of data and information , collection, Value of Information, General model of a human as an information processor, Summary of information concepts and their implications , Organization and information, MIS and information concepts, 3. Systems : System concepts, System control, Types of system, Handling system complexity, Post implementation problem in a system, MIS and system concepts 4. Development Of MIS ,Development of long range plans of MIS, Ascertaining the class of information, Determining the information requirement, Development and implementation of MIS, Management of quality in MIS, Organization for development of MIS , MIS : factors of sucess & failure 5. Applications In Manufacturing Sector 6. Applications In Service Sector 7. Decision Making , Decision concepts, Decision methods toos & procedures, Behavioural concepts in decision making, Organizational decision making, MIS & decision making concepts 8. Decision Support Systems, DSS concept and philosophy, DSS: Deterministic systems, AI systems , Knowledge Based Expert System (KBES), MIS and role of DSS, 9. DBMS ,Concept of RDBMS 10. Enterprise Management System, EMS, ERP (Basic features), Benefits of ERP, ERP selection, ERP implementation, EMS & MIS, 11. Business Process Re-Engineering, Introduction, Business process, Process model of organization, Value stream model of organization, MIS & BPR

REFERENCES : 1. Management Information Systems -W.S. Jawadekar 2. Management Information Systems- Jerome Kanter

CSC1814 : DISTRIBUTED SYSTEMS

Theory	:	4 Lectures	Marks(Theory)	:	100

Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150
Prerequisites	:	Operating Systems			

Objectives:The Distributed Operating Systems course is intended to teach students the basic issues involved in design of different components of distributed operating system and familiarize them with a case study of such an operating system. 1. General Introduction to Distributed Systems : Hardware and Software concepts, Issues in design of a Distributed Operating Systems. 2. Synchronization in Distributed Systems : Considering clocks, Mutual Exclusion, Atomic transaction, Deadlocks in distributed systems. 3. Communication in distributed systems : Covering layered protocols, ATM Networks, Client Server Models and Remote Procedure Calls. 4. Processes and Processors in distributed ystems : Processor allocation, Threads, Scheduling, fault tolerance and real time distributed systems. 5. Distributed File Systems : design and implementation. 6. Distributed Shared Memory : Consistency Models, Page - based, object based shared memories. 7. Case Studies on a distributed system.

REFERENCES : 1. Distributed Operating Systems: Andrew S. Tanenbaum 2. Distributed System Concepts & Design : Colouris

CSC1815 : UNIX/LINUX PROGRAMMING AND ADMINISTRATION

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150
Prerequisites	:	Computer Networks, C or Java Programming Language			
Prerequisites	:	1. Computer Organisation 2. Microprocessors 3. Systems Programming 4. Operating Systems			
Objectives	:	The course assumes students to have reasonably good knowledge of working of Unix/Linux Operating system, a Case Study & its Administration. Students should be able to appreciate various concepts of operating systems and their implementations in Unix/Linux and evaluate critically their suitably in a given environment. They may also work on the projects for development modules of an operating system. 1History, Evolution 2 Design Principles 3 Kernel Architecture, Modules of the Kernel 4Resource Management a)Process Management : i) Single user/tasking/threaded ii)Multi user/tasking/threaded a) Scheduling , Inteprocess Communication & Synchronization b) Physical & Virtual Memory Management c) File Systems Management d) Input/Output Management 4) Network Structure 5) Security a) Access Privileges b) Firewall Setup 6) User & Profile Management 7) Users/Programmers Interface a) X-Windows Setup/X-org b) Differences between GNome & KDE 8) Unix/Linux Commands 9) vi/vim editor 10) Shell & Shell Scripting 11) Types of Servers & Server Setup in Linux a) File/FTP Server b) Networ k Server c) Mail Server d) Web Server e) Samba Server e) Telnet Server 12) Installation, Setup & Configuration Comparisions of various Distributions a) RHEL/ Fedora b) SUSE c) Ubuntu/VMWare/Virtual Box			

REFERENCES : 1.Operating Systems : Madnick & Donovan 2.Operating Systems Principles:Hansen Per Brinch 3.Design of UNIX Operating Systems: Bach M. 4.Operating Systems Principles:Milan Milenkovic 5.Operating Systems Design & Implementation : Andrew S. Tanenbaum 6. Operating System Concepts & Design : William Stallings, Unix : Sumitabha Das

CSC1816 : SOFTWARE ENGINEERING

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : Analysis and Design of Information Systems

Objectives : This course has a major objective of introducing students to the essential aspects of Software Engineering methods to ensure good quality software products as a part of system development project. 1. Introduction to Software Engineering : the software as product and a process, software process models 2. Software Requirements Definition : the software requirements documentation, System context, Requirements Definition & Evolution. 3. Software Design : the design process, Design strategies and Design quality. 4. Software Validation and Verification : the testing process, test planning, testing strategies, implementation. 5. Software Management : the management activities – Configuration management, Versioning, Software management structures, programmer productivity. 6. Software Quality Assurance : Process quality assurance, software standards, quality reviews, software metrics. 7. Case Tools

REFERENCES 1. Software Engineering- Ian Sommerville 2. Software Engineering - A practitioner's approach - Roger S.Pressman

CSC1802 : ELECTIVE - II

CSC1821 : COMPUTER FAULT DIAGNOSIS AND SERVICING

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150
Prerequisites	:	1.Computer Architecture 2.Microprocessors 3.Advanced Microprocessors			

Objectives:Students must have good knowledge of the logical and physical working of the computer system. Understand the maintenance of the Pentium motherboard and the interfacing of cards and peripherals to the motherboard. To study the Network and software maintenance of the Pentium processor. Students will gain an experience in diagnosis of different types of faults that can occur in the system and the rectification of the same.

1.Introduction to Computers – their configurations like speed, motherboard, CPU, etc. 2.Microprocessors in PC – P I, P III, Celeron, Duron, Athalon, P IV, differences in the socket styles, data & address buss size, speeds, cache size(L1/L2) 3.Microprocessor support chipsets on motherboard and their differences 4.Different types of memories like EDO, SDRam, DDRam, RDRam etc., their frpmt sode Bus speeds (FSBS) 5.Interrupts, DMS & I/O mappings, Data transfer techniques used by various peripherals like keyboard, FDD, HDD, printer,etc. 6.Various types of I/O slots like ISA, PCI, AGP, AMR and their difference. Motherboard form factor AT & ATX server (dual processor) specifications, upgradability with future processors and memories. 7.CMOS setup configuration – Standard, Advanced, Power Management, peripheral CMOS setups 8.Various types of I/O converters & cables in PC like serial, parallel , USB, modem, network, InfraRed devices. 9.Harddisk partitioning, EIDE/SCSI for various OS installations like Windows, Unix/Linux 10.Installations of Addon cards like AGP, Network, Modem, Sound cards

and configurations under Windows 11.Introduction to trouble shooting techniques, different types of faults – solid, intermittent hardware & software faults 12.Systematic trouble shooting approach by systems observations symptoms analysis fault diagnosis & rectification documentation for future references 13.Using diagnostic tools & test equipments like DMM, logic probe, oscilloscope 14.Diagnostic Software like AMIDIAG, MSD 15.Power On Self Test sequences & emr beeps 16.Study of AT & ATX SMPS and output voltages , peripherals like mouse, FDD, HDD, printer, keyboard interfacing and their faults and servicing/precautions , Network related fualts. 17.Faults due to electrostatic, magnetic & environmental effects 18.Power conditioners like spike suppressors, CVT , line conditioners, UPS and their capacities, which to use & where 19.Viruses and Virus scanners, how they affect and can be avoided 20.Computer Room preparation and layout for multi-user system.

REFERENCES : 1. IBM PC & Clones (2nd Edition) : B. Govindrajalu (TMH) 2. Trouble shooting Maintaining and Repairing PCs(5th Edition) : Bigelaws (Tata Mcgraw Hill) 3. Upgrading & Repairing PCs (BPB) (2003 Edition) : Mark Minasi 4. Upgrading & Repairing PCs (13th Edition) : Scott Muelkar 5. Inside th ePC (8th Edition):Peter Norton6. PC Hardware for Begineers Guide : ROM GILSTAR(TMG)

CSC1822 : OPERATION RESEARCH

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150
Prerequisites	:	Analysis and Design of Information Systems, Engg. Economics			

Objectives:The students are required to have knowledge of how application systems are designed and developed. This course will enable the students to learn the techniques to perform:- Cost - Benefit Analysis : Evaluation and Optimization Software Optimization Project Scheduling

1.Models as abstraction of real world ,types and classification ; model building course vs. fine grain building of models. 2.Applications to computing ,economic,electronic,environmental, industrial, organizational ,service and telecommunication areas. 3.Elements of algorithms and complexity performance criteria,heuristics. 4.Graphs & Flows : shortest path, spanning trees, minimal cost flows, probabilistic networks, CPM/PERT, integrality of solutions.

REFERENCES : 1. Operations Research - Kanti Swaroop, Manmohan & Gupta

CSC1823 : ADVANCED TECHNOLOGIES IN DATABASES

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150
Prerequisities	:	Relational Database Management System			

Objectives : This course will deal with the advanced topics / techniques of a database management system. The main aim is to study the concepts of Data Warehousing and Data Mining. Comparisions between the working of different database products like ORACLE, DB2, etc. will be covered. After studying this course students will be able to design a Data Warehouse as per the given requirements. 1. The following topics shall be covered with respect to the currently popular databases like ORACLE, DB2, SYBASE, etc. with a view to illustrate availability of various features and facilities with these RDBMSs in consideration to following topics :Database Systems using DB2 UDB EE and ORACLE, Database Architecture, Security, Authorization, Access granting and revoking, Transaction Processing, Concurrency and Locking, Backup and Recovery, 2. Data Warehousing, 3. Characteristics , 4. Data Marts, Types, Loading, Meta Data, Data Model, Maintenance and Nature of Data, Software Components, Tables, External Data, Reference Data, Performance Issues, Monitoring Requirements & Security, 5. Online Analytical, Processing, OLTP and OLAP systems, Data Modelling, OLAP tools 6. Data Mining, Introduction, Algorithms, Database Segmentation, Predictive Modelling, Link Analysis, 7. Tools for Data Mining, 8. Developing a Data Warehouse , 9. Applications of Data Warehousing and Data Mining (Case Studies)

REFERENCES: 1. Books by Oracle Press 2.DB2 Books (Online) 3.Data Warehousing : C.S.R. Prabhu

CSC1824 : ADVANCED COMPUTER GRAPHICS AND MULTIMEDIA

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150
Prerequisites	:	Computer Graphics, Structured Programming Languages, Data Structures, Engineering Mathematics			

Objectives:This course will provide the students with the knowledge for Computer Animation and Computer Modelling.

1.Structures and Hierarchical Models, Structure concepts, Editing structures, Basic Modelling, Hierarchical Modelling 2.Interactive input methods, Input of graphical data, Input functions, Interactive picture construction, 3.Three dimensional concepts, Three dimensional display methods, Three dimensional graphics, 4.Three dimensional object representations, Polygon surfaces, Curved lines and curved surfaces, Quadric surfaces, Super quadrics, Spline representations, Cubic spline interpolations, Bezier curves and surfaces, Bspline curves and surfaces, Beta splines, Rational splines, Conversion between spline representations, Displaying spline curves and surfaces, Constructive solid geometry, Fractal geometry models, Particle systems, Visualization of data sets 5.Three dimensional geometric and modelling transformations, Translation, otation, Scaling, Reflections, Sheer, Composite transformations , 3D transformation functions, Modelling and coordinate transformations 6.3D Viewing, Viewing pipeline, Viewing coordinates, Projections, View volumes and general projection transformations, Clipping 7. Visible surface detection techniques 8.Illumination models and surface rendering methods, Light sources, Basic illumination models, Displaying light intensities, Half tone patters and dithering techniques,Polygon rendering techniques, Radiosity lighting model, Adding surface detail 9. ComputerAnimation, General computer animation functions, Raster animation, Computer animation languages, Key frame systems, Motion specifications

REFERENCES: 1.Computer Graphics : Donald Hearn, M. Pauline Baker 2.The OpenGL Programming Bible

CSC1825 : MOBILE COMPUTING

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150
Prerequisites	:	Computer Networks			

Objectives:The Mobile Computing course is intended to teach students the issues involved in wireless technology.
1.Broadband Wide Area Networking; SDH, Frame Relay and ATM 2 Cell Relay and ATM Internetworking 3 Distributed Computing and The NFS 4 The Next Generation Protocols 5 Transition to Next Generation Protocols 6 Quality of Service and Real-Time Application Issues 7 Multicast 8 Voice Over IP 9 TDMA and CDMA; Features Compared and Contrasted 10 Mobile IP; Concepts and Issues 11 Wireless Application Protocol 12 Partial Mobility with Wireless Local Loops **Practical and Term work** : The practical and Term work will be based on the topics covered in the syllabus. Minimum 5 experiments should be carried out.
Reference: 1. Internetworking with ISDN, Frame Relay & ATM -By William Stallings 2.ATM - protocols, applications and standards-By Hueber et al 3.Internetworking with TCP/IP : volume 1 & 3-By Douglas Comer 4.Computer Networks-By A. Tanenbaum 5.Unix Network Programming - 1 & 2 -By Richard Stevens 6. WAP Specifications www.wapforum.org
Various RFCs, Technical Journals, Papers & Internet Drafts

CSC1826 : WEB TECHNOLOGY

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : Computer Networks
Objectives : Enables student to develop web based applications
1. Introduction to Networking. 2.Introduction to TCP/IP 3.Introduction to Electronic Commerce 4.Introduction to Web Technology 5. Dynamic Web Pages 6. Active Web Pages 7. User Sessions in E-commerce Applications 8. Electronic Commerce Transaction Management 9. Electronic Commerce Security Issues 10. Online Security and Payment Processing Mechanisms 11. Middleware and Component - based E-commerce Architectures 12. Electronic Data Interchange (EDI) 13. Extensible Markup Language (XML) 14.Wireless Application Protocol (WAP)15. Case Studies : Building Web commerce site, and Using Public Key Infrastructure (PKI) to provide security to Web applications.
REFERENCES : 1. Web Technologies - Achyut S Godbole, Atul Kahate

CSC1827 : GEOGRAPHICAL INFORMATION SYSTEM

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : C programming, Data Structures, Database Management Systems, Computer Graphics
Objective : A Geographical Information System is a computer based system that allows to study natural and man-made phenomena with an explicit bearing in space. After studying this subject the students will be able to enter data, manipulate the data and produce interpretable output. 1) An Introduction to GIS 2) Geographic Information and Spatial Data Types 3) Data Processing Systems 4) Data Entry and Preparation 5) Spatial Data Analysis 6) Data Visualization 7) Data Quality and Meta Data
REFERENCES: 1. Principals of Geographic Systems by Rolf A de

CSC1828 : SIMULATION & MODELLING

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : Programming Languages
Objectives: Students will have the knowledge to simulate various real life systems.
1.System models and concept of states 2 System studies3 System simulation 4 Continuous system simulation 5 Arrival patterns & service times 6 Discrete system simulation 7 Some popular Simulaion Languages 8 Simulation implementation

CSC1803 : CLIENT SERVER ARCHITECTURE

Theory	:	3 Lectures	Marks(Theory)	:	100
Tutorial	:	1	Marks(Pr/Tw/Viva):	50	
Practicals	:	3 Hrs.	Total	:	150

Prerequisites : Structured & Object Oriented Programming Language , Relational Database Management Systems
Objectives:This subject aims at teaching the evolution of CSA & issues related to its design and implementation. It enables the student to do internet intranet programming and n-tier architecture based application programming
1Overview of Client/Server Computing 2 Evolution of Client/Server Computing 3 Overview of Client/Server Applications 4 Understanding Client/Server Computing 5 Client Hardware & Software 6 Client Requirements 7 Server Hardware 8 Server Environment 9 Server Requirements 10 Development Methodology 11 Application Development Tools a) Java Networking Model b) Java Database Connectivity c) Remote Method Invocation d) Servlets e) Java Beans f) Enterprise Java Beans g) Java mail h) JMS & JDI
REFERENCES 1. Client Server Architecture – Alex Berson 2.Client/Server Computing – Dawna Travis Dewire 3.Developing Client Server Applications – W.H. Inmon 4.Java in a Nutshell – David Flanagan 5.Sun Microsystems Press Java Series vol1 & 2 – Peter van der LINDEN 6.Java2 Platform, Enterprise Edition Platform & Component Specification – Sun Microsystems – Shannon 7.Java Server & Servlets - Rossbach 8.The Java Tutorial – Mary Campione & Kathy Walrath 9.Internet & WWW – How to program – Dietel, Dietel & Nieto 10.Java API – Reference – Colin Fraizer 11.Headfirst Servelets and JSP – Kathy Sierra 12.EJB's – O'Reilly

CSC1805 : NETWORK SECURITY

Theory	:	4 Lectures	Marks(Theory)	:	100
Tutorial	:	0	Marks(Pr/Tw/Viva)	:	50
Practicals	:	2 Hrs.	Total	:	150

Prerequisites : Computer Networks, C or Java Programming Language
Objective : The subject focuses on basic concepts in Network Security. It aims to introduce the students to the fundamental techniques used in implementing secure network communications, and to give an understanding of common threats and attacks,

and some practical experience in defending network systems. 1) Introduction to Computer Network & Security 2) Security Concepts & Terminologies 3) Cryptography – Symmetric Key Cryptography and Public Key Cryptography 4) Message Digests, Digital Signatures, Authentication Systems 5) Network Security Applications, - Electronic Mail Security, -IP Security, -Web Security, -Network Management Security, -E-Commerce Security 6) Hacking & System Security – Intruders, Viruses, Malicious Software, Firewalls, VPN, etc., 7) Intrusion Detection Systems

REFERENCES: 1. Network Security Essentials – By William Stallings (PHI)

CSC1808 : PROJECT

(6T/P, 100P/TW/VIVA)

Prerequisites: The subjects that teach:- 1. Programming Methodologies 2. Programming languages 3. Front End Tools 4. Back End Tools 5. Analysis & Design of Information Systems

Objectives:This final year projects aims to expose students to real life situations and thus equip them with practical knowledge. On completion of this, students will have an understanding of project development cycle and thus will be in a position to take up projects in an organization independently.