(13HS101) ENGLISH- I

Program: B.Tech   Lecture : 3/ Week
Year: I   Tutorial : -
Sem : I   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To improve the language proficiency of the students in English.
2. To interpret the ideas and thoughts in a dynamic way.
3. To enable students to develop their listening skills.
4. To make students aware of the role of speaking in English.
5. To develop an awareness in the students about the significance of silent reading and comprehension.
6. To develop an awareness in the students about writing as an exact and formal skill.

COURSE OUTCOMES:
The students will be able to
1. Understand and use the language in a professional way.
2. Improve public speaking and gain confidence.
3. Develop the ability in communicating the ideas in a creative and understandable manner.
4. Understand the complex and complicated terminology that is used in other technical subjects.

UNIT- I
Wit and Humour (Skills Annexe)
a. Essay Writing
b. Vocabulary-Synonyms and Antonyms

UNIT- II
Mokshagundam Visvesvaraya (Epitome of Wisdom)
1. Formal and informal Conversation
2. Letter Writing
3. Grammar-Articles and Prepositions

UNIT -III
The Cyber Age (Skills Annexe)
a. Note making and Note Taking
b. Skimming and Scanning
c. Reading for subject/ theme

UNIT -IV
Three days to see (Epitome of Wisdom)
1. Paragraph writing
2. Sequence of Tenses - Question Tags
3. Vocabulary-Idioms and Phrasal Verbs

UNIT -V
Materials Technology (Cambridge English for Engineering)
1. Presentation Skills
2. PPTs / Short Films
3. Grammar – Adjectives and Concord

TEXT BOOKS:
1. Skills Annexe (JNTUH)
2. Epitome of Wisdom (JNTUH)
3. Cambridge English for Engineering (Cambridge)

REFERENCE BOOKS:
1. Murphy, "Murphy's English Grammar with CD"- Cambridge University Press, 15 April, 2004, ISBN No.: 9780521537629.
2. Barun K. Mitra, "Personality Development and soft skills"- Oxford University press UMCA Library building, Jain singh road, New Delhi- 110001, 2011, ISBN NO.: 978-0-19-806621-7.

(13HS103) MATHEMATICS – I

Program: B.Tech   Lecture   : 4/Week
Year: I   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn applications of mean value theorems.
2. To learn Taylor's series expansion of various functions.
3. To understanding the importance of Differential equations in engineering and solving differential equations and applications.
4. To learn higher order linear differential equations with constant co-efficients.
5. To learn Laplace and Inverse Laplace transforms with applications.
6. To learn application of Laplace transforms to differential equations

COURSE OUTCOMES:
The students will be able to
1. Deal with application oriented problems in engineering studies.
2. Apply differentiation techniques to engineering problems.
3. Apply Laplace transform technique to engineering problems.
4. Apply Laplace transforms to solve the differential equations.

UNIT-I
Mean Value Theorems: Mean value Theorems – Rolle's Theorem – Lagrange's mean value theorem – Cauchy's mean value theorem – Taylor's Theorem – Maclaurin's theorem (all theorems without proofs)-Verification and Applications – Curvature – Radius of curvature – Circle of curvature - Centre of curvature – Evolutes and Envelopes.

UNIT-II
Ordinary Differential Equations of First Order and First Degree: Formation of a differential equation – Solution Methods – variable separable method – Homogeneous & Non-homogeneous – Exact & non exact differential equations – Linear differential equations – Bernoulli's differential equations – Applications – Orthogonal Trajectories – Newton's law of cooling – Law of natural growth & decay.

UNIT-III
Higher Order Linear Differential Equations: Linear differential equations of second and higher order with constant coefficients – Solution – Finding Complimentary function and Particular integral – RHS of the type e^{ax} – $\sin ax$ – $\cos ax$ – x^n – $e^{ax}v(x)$ – $x^n v(x)$ – Method of Variation of Parameters.

UNIT-IV
Laplace Transforms: Definition – Existence – Laplace transforms of standard functions – First & Second Shifting theorems – Change of scale property – Laplace transform of Derivatives – Integrals-functions multiplied by t – divided by t – Laplace Transform of Periodic functions

UNIT-V
Inverse Laplace Trasforms and Applications: Inverse Laplace transforms – Inverse Laplace transforms by partial fractions – Inverse Laplace transforms of Derivatives – Integrals – functions multiplied by s – divided by s – Convolution theorem – Applications of Laplace transforms to Ordinary Differential Equations.

TEXT BOOKS:
1. R.K.Jain, S.R.K. Iyengar, "Advanced Engineering Mathematics", Narosa Publishing House, New Delhi-110002, India. ISBN: 0-8493-2417-3.
2. B.S.Grewal, "Higher Engineering Mathematics", Khanna Publishers, 2-B Nath Market, Nai Sarak, Delhi-110006, India. ISBN: 81-7409-195-5.

REFERENCE BOOKS:
1. Erwin Kreyszig, "Advanced Engineering Mathematics", - John wiley & Sons, 605 Third Avenue, New York, NY 10158-0012, 1999- 2000, ISBN: 9971-51-283-1.
2. Peter V. O'Neil, "Advanced Engineering Mathematics", CL- Engineering, March-2006. ISBN: 0534552080.

(13HS106) ENGINEERING PHYSICS – I

Program: B.Tech   Lecture   : 3/ Week
Year: I   Tutorial   : 1/Week
Sem : I   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the basic concepts of crystallography.
2. To understand the fundamentals of X-ray diffraction.
3. To understand the essentials in dielectric and magnetic materials.
4. To understand the applications of dielectric and magnetic materials.
5. To understand the principles involved in lasers and optical fibers.
6. To realize the applications of lasers and optical fibers.

COURSE OUTCOMES:
The students will be able to
1. Learn the basics of solid state physics, which will empower them for research and development in the field of materials science and engineering.
2. Learn the functionality of dielectric and magnetic materials and also their device applications.
3. Learn the working of a laser source as well as the optical fiber.
4. Acquire interest and curiosity in the industrial applications of laser and optical fibers.

UNIT – I
Crystallography and Crystal Structures: Space Lattice**,** Unit Cell, Lattice Parameters, Crystal Systems, Bravais Lattices, Crystal Planes and Directions - Miller Indices, Inter-Planar Spacing of Orthogonal Crystal Systems, Atomic Radius, Co-ordination Number and Packing Factor of SC, BCC, FCC and Diamond Structures, Structures of NaCl and CsCl, Defects in solids – Point, Line and Surface defects (Qualitative), Applications of Defects, **X-ray Diffraction:** Bragg's Law, Powder Method, Applications of X-ray Diffraction.

UNIT – II
Dielectric Properties: Introduction to Dielectrics, Electronic, Ionic and Orientation Polarizations and Calculation of Polarizabilities, Dielectric relaxation, Ferro-electricity – Characteristics, Hysterisis Loop, Piezo-electricity, Production and Detection of Ultrasonic waves by Piezo-electric Effect, Pyro-electricity.

UNIT – III
Magnetic Properties: Introduction to Magnetism, Origin of Magnetic Moment, Bohr Magneton, Classification of Dia, Para and Ferro Magnetic Materials, Hysteresis Loop, Soft and Hard Magnetic Materials, Properties of Anti-Ferro and Ferri Magnetic Materials, Ferrites and their Applications, Superconductivity, Meissner Effect, Type I and II superconductors, Current Trends and Applications of Superconductors.

UNIT – IV
Lasers: Characteristics of Lasers, Stimulated Absorption, Spontaneous and Stimulated Emission of Radiation, Einstein's Coefficients and Relation between them, Working of Helium-Neon Laser and Semiconductor Laser, Applications of Lasers.

UNIT – V
Fiber Optics: Structure and Working of Optical Fiber, Acceptance Angle and Acceptance Cone, Calculation of Numerical Aperture, Types of Optical Fibers – Step Index and Graded Index Fiber, Attenuation in Optical Fibers, Applications of Optical Fibers.

TEXT BOOKS:
1. R.K. Gaur & S.L. Gupta, "Engineering Physics", Dhanpat Rai Publications (P) Ltd., Eighth Edition – 2001 (Reprint – 2008), ISBN No.: 978 81 8992 822 3.
2. P.K. Palanisamy, "Engineering Physics", SciTech Publications, India (P) Ltd., Third Edition - 2013, ISBN No.: 978 81 8371 487 7.

REFERENCE BOOKS:
1. A.J. Dekker, "Solid State Physics", Macmillan India Ltd., Reprint – 2001, ISBN No.: 978 03 3300 462 3.
2. M.R. Srinivasan, "Physics for Engineers", New Age International (P) Ltd., Second Edition (Reprint – 2009), ISBN No.: 978 81 2242 603 8.
3. P. Madhusudhan Rao, "Applied Physics for Engineers", Academic Publishing Company, First Edition - 2013, ISBN No.: 978 81 8996 669 3.

(13HS109) ENVIRONMENTAL STUDIES

Program: B.Tech   Lecture   : 3/Week
Year: I   Tutorial : -
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To develop knowledge and skills to deal effectively with environmental problems such as global warming, acid rains, endangered species of plants and animals.
2. To understand the use of conservation of natural resources like forests, land, food, energy and minerals etc.
3. To learn preparation of environmental impact assessment.
4. Management of solid waste, bio-medical waste and e- waste by using recycling, inceration techniques.
5. To get a clear idea about ecosystem, its structure and functions.
6. To get awareness of food chain, energy in the ecosystem.

COURSE OUTCOMES:
The students will be able to
1. Understand biomagnifications of chemicals, hazardous metals.
2. Understand conservation of natural resources which is essential for sustainable development of the country.
3. Prepare the environmental impact assessment (EIA) report.
4. Build awareness of global problems like climate change, acid rains, global warming, ozone depletion, carbon emissions etc.

UNIT-I
Introduction to Environmental Studies and Ecosystems: Scope, importance, multi disciplinary nature of Environmental Studies and public awareness, environmental education. Concepts of ecosystem, energy flow in an ecosystem, food chain, food web, bio magnification, types of ecosystems- forest, grassland desert and aquatic .

UNIT-II
Biodiversity and Its Conservation: Definition, types, value, India as a mega diversity nation, hotspots of biodiversity, threats to biodiversity, extinction of species, conservation of biodiversity- insitu and exsitu conservation.

UNIT-III
Natural Resources and Sustainability: Introduction, Water resources and its conservation- rain water harvesting, dams-benefits and problems, forest resources-deforestation, mineral resources-mining and its impact, energy resources-renewable and non-renewable with examples.
 Sustainability-concept, threats to sustainability, strategies for achieving sustainability, role of IT, green building concept, environmental ethics.

UNIT-IV
Pollution and Waste Management: Pollution-introduction, types- air, water and soil, effects and control measures. Protocols-Montreal and Kyoto protection acts-wild life conservation, forest conservation, air and water acts. Waste management- collection, handling rules and segregation of municipal solid waste, bio-medical waste, hazardous waste, e-waste.

UNIT-V
Global Environmental Issues and Environmental Impact Assessment (EIA): Climate change, green house gases, global warming, Acid rain, Ozone layer depletion, Ganga action plan, Chernobyl disaster, Minamata disease, Bhopal gas tragedy. EIA- definition, impact, classification of impacts-positive and negative, prediction methods of EIA- adhoc and matrix methods.

TEXT BOOKS:
1. Erach Barucha, "Environmental Studies"- UGC, 3-5-819, Hyderabad- 500029
2. Garg S.K. and Garg. R, "Ecological and Environmental Studies", Khanna Publishers. Delhi-2006.

REFERENCE BOOKS:
1. Gilbert M. Masters, Introduction to "Environmental Engineering & Science"- LPE Pearson educations in ISBN-81-297-0277-0.
2. Richard T. Wright, "Environmental Science", towards a sustainable Future, PHI Learning Pvt. Ltd., M97, Ashok Goshal, Connaught circuit, New Delhi.
3. Henry J.G. and Heinke G.W., "Environmental Science and Engineering", 2nd Edition, Prentice Hall of India, New Delhi-2004.

WEB RESOURCES:
1. hyd2_upilco@sancharnet.in

(13ME101) ENGINEERING MECHANICS - I

Program: B.Tech   Lecture   : 3/ Week
Year: I   Tutorial : 1/Week
Sem : I   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the basic principles of static's applicable to rigid bodies in equilibrium
2. To apply static principles to the solution of a variety of practical problems.
3. To determine the component of force in space.
4. To determine the centre of gravity of Simple figures, composite figures and its applications
5. To determine the Moment of inertia of Simple figures, composite figures and its applications
6. To determine mass moment of inertia of simple objects, composite bodies.

COURSE OUTCOMES:
The students will be able to
1. Apply engineering science principles to develop algebraic relationships among key physical parameters and variables based on analysis of a specified system
2. Apply the principles of mechanics for solving practical problems related to equilibrium of rigid bodies and particle in motion.
3. Use references that provide tabulated physical data that are useful for mechanical engineers.
4. Deal the subjects like Mechanics of Solids, Mechanics of Fluids and Design of machines etc. in higher classes with an ease.

UNIT – I
Introduction to Engineering Mechanics – Basic Concepts: System of Forces: Types - Coplanar concurrent forces – Components in Space – Resultant – Moment of Force and its Application – Couples and Resultant of Force Systems

UNIT – II
Equilibrium of Systems of Forces: Free Body Diagrams, Equations of Equilibrium of Coplanar Systems, Spatial Systems for concurrent forces. Lamis Theorem, Graphical Method for the equilibrium of Coplanar Forces, condition of equilibrium.

UNIT – III
Centroid: Centroids of simple figures (from basic principles) – Centroids of Composite Figures.

Centre of Gravity: Centre of Gravity of simple body (from basic principles), Centre of gravity of composite bodies, Pappus theorem.

UNIT – IV
Area Moment of Inertia: Definition – Polar Moment of Inertia, Transfer theorem, Moments of Inertia of Composite figures, Products of Inertia, Transfer Formula for Product of Inertia.

UNIT – V
Mass Moment of Inertia: Moment of Inertia of masses, Transfer Formula for Mass Moment of Inertia, Mass Moment of Inertia of Composite Bodies.

TEXT BOOKS:
1. Fedinand. L. Singer, "Engineering Mechanics", Harper – Collins, 3rd Ed. Jan, 1975, ISBN-13: 9780060462314.
2. Timoshenko, Young, "Engineering Mechanics", TMH, 4th Ed., 2007, ISBN: 9781259062667.

REFERENCE BOOKS:
1. S.S Bhavikatti, J.G Rajasekharappa, "Engineering Mechanics", New Age International, 4th Ed., Feb. 2012.
2. KL Kumar, "Engineering Mechanics",Tata McGraw Hill.

(13ME103) ENGINEERING GRAPHICS

Program: B.Tech   Lecture   : 2/Week
Year: I   Drawing : 4/Week
Sem : I   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To use various engineering drawing instruments.
2. To learn the basic conventions of drawings, dimensioning, scales and conic sections like ellipse, parabola and hyperbola.
3. To learn projections of points, lines viewed in different positions
4. To learn projections of plane surfaces and solids viewed in different positions.
5. To gain knowledge of sections of solids and their usage in real time applications.
6. To attain the concepts of isometric, orthographic projections.

COURSE OUTCOMES:
The students will be able to:
1. Understand and draw the different types of conic sections.
2. Analyze the projections of points, straight lines, plane surfaces, solids at different positions and angles.
3. Convert orthographic views into isometric views and vice versa.
4. Perform sections of solids, development of surfaces and their applications in human life.

UNIT – I
Introduction to Engineering Drawing: Principles of Engineering Graphics and their Significance – Drawing Instruments and their Use – Conventions in Drawing – Lettering – BIS Conventions, Geometrical Constructions.

a. Conic Sections: Ellipse – General method, Concentric Circles method. Parabola General method. Hyperbola - General method and Rectangular Hyperbola.
b. Scales – Plain Scale and Diagonal Scale

UNIT – II
Introduction of Orthographic Projections: Principles of Orthographic Projections – Conventions – First and Third Angle, Projections of Points.

Projection of straight lines: Lines parallel to one plane and perpendicular to other plane, Line parallel to both the planes, Line inclined to one plane and parallel to other, Line inclined to both the planes.

UNIT – III
Projections of Planes: Projections of regular Planes - Plane parallel to one of the reference plane and perpendicular to other, Plane inclined to one of the reference plane and parallel to other, Projection of Oblique Planes

UNIT – IV
Projections of Regular Solids: Types of Right Regular Solids, Projection of Solids in Simple Positions – Axis perpendicular to the HP, Axis perpendicular to the VP, Axis parallel to both HP & VP, Projection of solids with axis inclined to one of the reference planes and parallel to the other, Projection of solids inclined to both the reference planes.

UNIT – V
Sections of Solids: Right regular solids- Prism, Cylinder, Pyramid, Cone in simple position-Auxiliary Views

Transformation of projections: Conversion of Isometric Views to Orthographic Views – and Vice - Versa.

TEXT BOOKS:
1. N.D. Bhat, "Engineering Drawing", Charotar, 2013.
2. Venugopal, "Engineering Drawing and Graphics", New age, 5th Ed. 2007.

REFERENCE BOOKS:
1. Basant Agarwal and C.M.Agarwal, "Engineering Drawing", Mc. Graw Hill, 2nd Ed. 2014.
2. Narayana and Kannaiah, "Engineering Drawing", SciTech Publishers.
3. Johle, "Engineering Drawing", Tata Macgraw Hill.

(13HS111) ENGINEERING PHYSICS LABORATORY

Program: B.Tech   Lecture   : -
Year: I   Tutorial : -
Sem : I   Practical : 3/ Week
Int. Max Marks: 25   Credits   : 2
Ext. Max Marks: 50

COURSE OBJECTIVES:
1. To understand the phenomenon of light like interference and diffraction.
2. To familiarize with the working of optical fibers.
3. To strengthen the basic concepts in mechanics.
4. To understand the magnetic and electrical properties.
5. To study the characteristics of semiconductor devices.
6. To prepare the students to take up laboratory courses of higher semesters.

COURSE OUTCOMES:
The students will be able to:
1. Experimentally observe and understand the concepts in optics like interference, diffraction and total internal reflection.
2. Learn the functionality of capacitors, resistors and inductors as well as the concepts in magnetism.
3. Realize the working of various semiconductor devices, hence their applications.
4. Acquire the required expertise to handle experiments on semiconductor devices, optical fibers, electrical circuits, which will help the students in their further studies.

List of Experiments (Any Ten Experiments Compulsory)
Optics:
1. Determination of radius of curvature of a plano-convex lens using Newton's rings setup.
2. Determination of wavelength of a source (sodium vapour lamp) using diffraction grating.
3. Determination of wavelength of a laser source.
4. Evaluation of numerical aperture and bending losses of an optical fibre.

Mechanics:
5. Determination of rigidity modulus of a wire using Torsional pendulum.
6. Determination of frequency of an electrically driven tuning fork using Melde's apparatus.
7. Determination of frequency of an AC supply using sonometer.

Electricity & magnetism:
8. Determination of time constant of an R-C circuit.
9. Determination of resonant frequency and Q-factor of an L-C-R circuit.

10. Determination of magnetic field along the axis of current carrying coil using Stewart and Gees apparatus.

Electronics:

11. Characteristics of LED and LASER sources.
12. Characteristics of a Solar Cell.
13. Characteristics of p-i-n and Avalanche Photodiode detectors.
14. Determination of energy gap of the material of a p-n junction.

TEXT BOOKS:

1. C.V. Madhusudhana Rao & V. Vasanth Kumar, "Engineering Physics Lab Manual", SciTech Publications, India (P) Ltd., Third Edition - 2012, ISBN No.: 978 81 8371 465 5.
2. Y. Aparna & K. Venkateswara Rao, "Laboratory Manual of Engineering Physics", VGS Publishers, First Edition – 2009.

(13ME104) ENGINEERING WORKSHOP PRACTICE

Program: B.Tech	Lecture : -
Year: I	Tutorial : -
Sem : I	Practical : 3/ Week
Int. Max Marks: 25	Credits : 2
Ext. Max Marks: 50	

COURSE OBJECTIVES:
1. To know the usage of various tools and their application in carpentry, tin smithy.
2. To know the usage of various tools and their application in black smithy, foundry, welding and house wiring
3. To make lap joint and dove tail joint in carpentry.
4. To make scoop, funnel and tray like items in tin smithy.
5. To use one-way, two-way switches, parallel and series connections in house wiring.
6. To know the basics of welding.

COURSE OUTCOMES:
The students will be able to
1. Know the fundamental knowledge of various trades and their usage in real time applications
2. Gain knowledge of Foundry, Welding, Black smithy, Fitting, Machine shop and house wiring
3. Understand the basis for analyzing power tools in construction and wood working, electrical engineering and mechanical engineering.
4. Use basic concepts of computer hardware for assembly and disassembly.

TRADES FOR EXERCISES:
   At least two exercises from each trade:
1. Carpentry
2. Tin smithy
3. Foundry
4. House-wiring.
5. Fitting

Demonstration of Trades:
1. Blacksmithy
2. Plumbing

TEXT BOOKS:
1. P.Kannaiah, K.L.Narayana, "Work shop Manual", Scitech Publishers, 2nd Ed. 2010, ISBN: 9788183711302.
2. S.K.Hajra choudhury, A.K.Hajra Choudhury, Nirihar Roy, "Elements of workshop Technology",(Vol-I & II) / Media Promotors & Publishers Pvt. Ltd., 13th Edition, ISBN Number: 8185099146 & ISBN, : 8185099154.

REFERENCE BOOKS:

1. P.N.Rao, "Manufacturing Technology", Tata McGraw Hill, 2006, ISBN Number: 0074631802.
2. B.S.Raghuvamshi, "A course in Workshop Technology", Dhanpat Rai & Co., 9th edition, 2003, ISBN: 81-85099-25-1.
3. H.S.Bawa, "Workshop Technology",Tata McGraw Hill Ltd., 5th edition, 2001, ISBN: 0074600273

(13HS102) ENGLISH- II

Program: B.Tech   Lecture : 3/ Week
Year : I   Tutorial : -
Sem : II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To improve the language proficiency of the students in English.
2. To interpret the ideas and thoughts in a dynamic way.
3. To enable students to develop their listening skills.
4. To make students aware of the role of speaking in English.
5. To develop an awareness in the students about the significance of silent reading and comprehension.
6. To develop an awareness in the students about writing as an exact and formal skill.

COURSE OUTCOMES:
The students will be able to:
1. Understand and use the language in a professional way.
2. Improve public speaking and gain confidence.
3. Develop the ability in communicating the ideas in a creative and understandable manner.
4. Understand the complex and complicated terminology that is used in other technical subjects.

UNIT -I
Risk Management (Skills Annexe)
1. Business Letters
2. Official Letters
3. Vocabulary-Homonyms, Homophones and Homographs

UNIT- II
Leela's Friend (Epitome of Wisdom)
1. Telephone Etiquette
2. Email Etiquette
3. Grammar-Types of Nouns and Verbs

UNIT- III
Sports and Health (Skills Annexe)
1. Reports Writing
2. Introduction to Project Reports and Research Papers

UNIT- IV
The Convocation Speech (Epitome of Wisdom)
1. Precise writing
2. Information Transfer Techniques
3. Technical Vocabulary

UNIT- V
Technical Development (Cambridge English for Engineering)
1. Preparation for Interview
2. Resume building

TEXT BOOKS:
1. Skills Annexe (JNTUH)
2. Epitome of Wisdom (JNTUH)
3. Cambridge English for Engineering (Cambridge)

REFERENCE BOOKS:
1. Nigel D. Turton "ABC of Common Grammatical Errors"- illustrated, reprint, Mac Millian publication, 2005, ISBN No.: 033356734x, 9780333567340.
2. M. Ashraf Rizvi "Effective Technical Communiation"- Tata Mc Graw- Hill Education, 2005, ISBN No.: 0070599521, 9780070599529.

(13HS104) MATHEMATICS - II

Program: B.Tech   Lecture   : 4/Week
Year: I   Tutorial : 1/Week
Sem : II   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn Fourier series.
2. To learn partial differential equations and solutions.
3. To understand multiple integrals.
4. To understand vector differentiation and identities.
5. To understand vector integration and applications.
6. To understand applications of double and triple integrals.

COURSE OUTCOMES:
The students will be able to:
1. Deal with application oriented problems in engineering studies.
2. Apply differentiation techniques to engineering problems.
3. Apply integration techniques to engineering problems.
4. Apply vector calculus to different engineering problems.

UNIT-I
Fourier Series: Definition of Fourier series – Dirichlet conditions – Fourier series of functions defined in $[0, 2\pi]$ – Fourier series of Even and Odd functions – Half range Fourier sine and cosine series – Fourier series in arbitrary intervals.

UNIT-II
First Order Partial Differential Equations: Formation of Partial differential equation – Elimination of arbitrary constants – Elimination of arbitrary functions – Solution of Linear first order (Lagrange) equations – Method of Grouping – Method of Multipliers – Method of separation of variables.

UNIT-III
Special Functions: Gamma and Beta functions – Properties – Evaluation of improper integrals.

Multiple Integrals: Double integrals, Triple integrals, change of order of integration, change of variables and applications to areas, volumes.

UNIT-IV
Vector Differentiation: Introduction to vectors - Ordinary and Partial derivatives of a vector valued function – Gradient of a scalar function – Divergence and Curl of a vector function – vector Identities (without proofs).

UNIT-V
Vector Integration: Integral of a vector valued function – Line integrals – Surface integrals – Volume integrals – Vector Integral Theorems – Green's theorem-Stokes theorem – Gauss Divergence theorems (statements without proofs) – verification & Applications.

TEXT BOOKS:
1. R.K.Jain, S.R.K. Iyengar, "Advanced Engineering Mathematics", Narosa Publishing House, New Delhi-110002, India. ISBN: 0-8493-2417-3.
2. B.S.Grewal, "Higher Engineering Mathematics", Khanna Publishers, 2-B Nath Market, Nai Sarak, Delhi-110006, India. ISBN: 81-7409-195-5.

REFERENCE BOOKS:
1. Erwin Kreyszig, "Advanced Engineering Mathematics", - John wiley & Sons, 605 Third Avenue, New York, NY 10158-0012, 1999- 2000, ISBN: 9971-51-283-1.
2. Peter V. O'Neil, "Advanced Engineering Mathematics", CL- Engineering, March-2006. ISBN: 0534552080.

(13HS107) ENGINEERING PHYSICS – II

Program: B.Tech   Lecture   : 4/Week
Year: I   Tutorial : 1/Week
Sem : II   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the basic concepts of quantum mechanics.
2. To understand the band structure in solids.
3. To understand the principles and concepts of semiconductor physics.
4. To understand the working and applications of semiconductor devices.
5. To understand the basic concepts in nanoscience and nanotechnology.
6. To realize the applications of nanomaterials.

COURSE OUTCOMES:
The students will be able to:
1. Familiarize with the quantized nature of energy levels as well as the formation of energy bands in solids.
2. Learn the fundamentals in semiconductor theory, inturn semiconductor devices.
3. Learn the functioning of various semiconductor devices, their performance and applications.
4. Familiarize with nanoscience and nanotechnology, which helps in understanding the miniaturization of devices.

UNIT – I
Principles of Quantum Mechanics: Planck's Radiation Law – Deduction of Wein's Law and Rayleigh-Jean's Law, Waves and Particle Duality, de Broglie Hypothesis, Matter Waves, Davisson and Germer's Experiment, Heisenberg's Uncertainty Principle, Consequences of Uncertainty Principle, Schrödinger's Time Independent Wave Equation, Physical Significance of the Wave Function, Particle in One Dimensional Potential Box (Quantitative) – Extension to three dimensions.

UNIT – II
Band Theory of Solids: Electron in a Periodic Potential, Bloch Theorem, Kronig-Penny Model (Qualitative), Origin of Energy Band in Solids, Concept of Effective Mass of an Electron, Classification of Materials into Conductors, Semi Conductors & Insulators.

UNIT – III
Semiconductor Physics: Concept of Fermi energy, Carrier Concentration in Intrinsic and Extrinsic Semiconductors (Quantitative), Fermi Level in Intrinsic and Extrinsic Semiconductors, Drift and Diffusion Currents, Einstein's Relation, Hall Effect.

UNIT – IV

Semiconductor Devices: Formation of PN Junction Diode, Forward and Reverse Bias (V-I Characteristics), Energy Band Diagram of PN Diode, Diode Equation (Qualitative), PN Diode as a Half Wave, Full Wave and Bridge Rectifier - Ripple Factor and Efficiency, Characteristics and Applications of Light Emitting Diode, Photo diode and Solar cell.

UNIT – V

Nanotechnology: Concept of Nanoscale, Surface to Volume Ratio, Quantum Confinement, Classification of Nanomaterials (1D, 2D, 3D), Types and Properties of Carbon Nanotubes, Bottom-up Fabrication: Sol-gel Method; Top-down Fabrication: Ball Milling Method, Characterization of Nanomaterials by AFM and TEM, Applications of various Nanomaterials.

TEXT BOOKS:
1. R.K. Gaur & S.L. Gupta, "Engineering Physics", Dhanpat Rai Publications (P) Ltd., Eighth Edition – 2001 (Reprint – 2008), ISBN No.: 978 81 8992 822 3.
2. P.K. Palanisamy, "Engineering Physics", SciTech Publications, India (P) Ltd., Third Edition - 2013, ISBN No.: 978 81 8371 487 7.

REFERENCE BOOKS:
1. S.O. Pillai, "Solid State Physics", New Age International (P) Ltd., Sixth Edition - 2010, ISBN No.: 978 81 2242 726 4.
2. B.S. Murthy, P. Shankar, Baldev Raj, B.B. Rath & James Murday, "Textbook of Nanoscience and Nanotechnology", Universities Press, First Edition – 2013, ISBN No.: 978 81 7317 738 3.
3. J.B. Gupta, "Electronic Devices and Circuits", S.K. Kataria & Sons, Second Edition – 2003, (Reprint – 2007), ISBN No.: 978 81 8574 975 2.

(13HS108) ENGINEERING CHEMISTRY

Program: B.Tech   Lecture   : 3/Week
Year: I   Tutorial : 1/Week
Sem : II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1 To understand the concept of hardness, its estimation and purification techniques of water.
2 To find problems in fields as diverse as the design and development of new materials and quality control.
3 To produce a new chemical demand or wait upon chemical developments for their application.
4 To get knowledge of suitable biopolymers and nano molecules that are useful in miniature super computers.
5 To understand how to predict potential complications by combining various chemicals or metals used in engineering field.
6 To understand the direct application of fundamental chemistry concepts to build eco-friendly environment.

COURSE OUTCOMES:
The students will be able to:
1. Use electrochemistry principles to develop theories in corrosion and its central methods.
2. Understand Engineering chemistry which is the back bone of designing and understanding the nature of various engineering materials.
3. Develop analytical capabilities of the students so that they can characterize, transform and use materials in engineering and apply the knowledge gained in solving related engineering problems.
4. Learn the basic knowledge of green polymers.

UNIT-I
Electro Chemistry: Concept of Electrochemistry, Conductance-Specific, Equivalent and Molar, Ionic mobility's, Measurement of Conductivity, Electrochemical Cells, Representation, Galvanic Cells, Electrochemical series, numerical problems. Electrodes & Batteries: EMF, Types of Electrodes, Reference electrode: Hydrogen Electrode, SCE, Quinhydrone electrode, Ion-selective electrode (Glass Electrode), Nernst equation, and concentration cells, Numerical Problems, Batteries: lead-Acid battery, Applications of batteries, Fuel cells-Hydrogen-Oxygen fuel cell, Methanol-Oxygen fuel cell, Applications of fuel cells.

UNIT-II
Corrosion and its Control: Introduction, causes & different types of corrosion and effects of corrosion, theories of corrosion-Chemical, Electrochemical corrosion, Corrosion reactions, Factors affecting corrosion-nature of metal-galvanic series, Over voltage, purity of metal, nature of oxide film, Pilling-Bedworth rule, Nature of Corrosion Product, nature of environment-effect of temperature, PH, effect of dissolved oxygen, Corrosion control

methods-Cathodic protection, sacrificial anode, impressed current cathode. Inhibitors-Cathodic and Anodic. Surface coatings-methods of applications on metals-Hot dipping, Galvanizing, Tinning and Electroplating.

UNIT-III
Water Chemistry: Introduction, Hardness, causes, types, expression of hardness, units, Estimation of hardness of water by EDTA METHOD numerical problems, boiler troubles: scale &sludge formation, Caustic Embrittlement, Boiler corrosion, softening techniques: Zeolite process, Ion-Exchange process, numerical problems, Brackish water Treatment: Reverse Osmosis and Electro dialysis.

UNIT-IV
Energy Resources: Fuels, Classification-conventional fuels (solid, liquid, gaseous) Solid fuels-Coal-Analysis-proximate & ultimate analysis and their significance, Liquid fuels-primary-Petroleum-refining of petroleum- cracking-knocking. Synthetic petrol-Bergius and Fischer Tropsch's process, Gaseous fuels – natural gas, analysis of flue gas by Orsat's method, Calorific value of fuel – HCV and LCV, Numerical Problems on Combustion.

UNIT-V
Engineering Materials Lubricants: Definition, classification, theories of lubrication-Properties of lubricants, flash point, fire point, cloud point, pour point and viscosity, applications.

Polymers: Introduction, Tacticity, Functionality, types of polymerization, polythene, PVC, poly ester, nylons, Fiber Reinforced Plastics (FRP), green plastics- introduction, polyesters from microbial and plant bio factories (poly lactic acid and poly hydroxyl alkanoates)-plastics from vegetable oils, cellulose and starch based materials.

TEXT BOOKS:
1. Jain & Jain, "Engineering Chemistry"-Dhanpat Rai Publishing Company, New Delhi.
2. Shashi Chawla, "Engineering Chemistry"-Dhanpath Rai & Co., New Delhi.
3. Gurudeep Raj, "Physical Chemistry", GOEL Publishing house.

REFERENCE BOOKS:
1. Vernon L. Snoeyink, David Jenkins, "Water-Chemistry"- Wiley, 1980-04-17, ISBN: 0471051969.
2. Gopal Nath Tiwari, Rajeev Kumar Mishra, "Advanced Renewable Energy Sources" Copyright: 2011Format: Paperback Extent: 584.
3. V.K. Ahluwalia, M. Kidwai, "Green Chemistry"- Third Edition 2009, ISBN (10): 81-8052-022-6, New Delhi.

(13HS105) MATHEMATICAL METHODS

Program: B.Tech   Lecture   : 3/Week
Year: I   Tutorial : 1/Week
Sem : II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn matrices, linear systems of equations.
2. To understand Eigen values and Eigen vectors.
3. To understand basic principles of iteration methods and find approximate roots of non linear equations by numerical techniques.
4. To learn interpolation to even and uneven spaced data.
5. To learn to find solution to difficult problems of integration using numerical integration.
6. To learn to fit a unique curve to the given data by the method of least squares

CONTRIBUTION TO OUTCOMES:
The students will be able to:
1. Solve matrices and find eigen values and eigen vectors.
2. Apply method of least squares to fit different curves to the given data.
3. Apply various numerical techniques to solve engineering and physical problems.
4. Apply computer based numerical techniques which will be very useful for research and projects.

UNIT-I
Solution of Linear Systems: Matrices – Basic definitions – Real symmetric, skew-symmetric and orthogonal matrices – Complex matrices – Hermitian, skew-Hermitian and unitary matrices – Elementary row and column operations – Echelon form – Rank – Normal form – Inverse by elementary row operations(Gauss Jordan Method) – System of homogeneous and Non Homogeneous equations by Gauss Elimination method – Gauss seidal method.

UNIT-II
Eigen Values and Eigen Vectors: Eigen values and Eigen vectors – Properties of Eigen values and Eigen vectors of Real and Complex matrices –   Cayley Hamilton Theorem (without proof) – Inverse and powers of a matrix by Cayley-Hamilton Theorem.

UNIT-III
Numerical Solutions of Non Linear Equations: Solution of algebraic and Transcendental equations – Bisection method – Regula-falsi method –Newton Raphson method – Iteration method.

UNIT-IV
Interpolation: Finite Difference Operators – Relations – Difference tables – Interpolation of equi-spaced data – Newton's Forward and Backward difference formulae – Gauss Forward and Backward difference formulae – Stirling's formula – Interpolation of unevenly spaced data – Lagrange and Newton's Divided difference formula.

UNIT-V
Numerical Integration and Curve Fitting: Numerical integration – Newton-cotes formula – Trapezoidal rule – Simpson's 1/3 and 3/8 rules. Curve fitting by Method of Least Squares – Fitting of Straight line – Parabola – Exponential curve – Power curve.

TEXT BOOKS:
1. Peter V. O'Neil, "Advanced Engineering Mathematics", CL- Engineering, March-2006. ISBN: 0534552080.
2. S.S. Sastry, "Introductory Methods of Numerical Analysis",- PHI Learning Pvt. Ltd, June-2012.

REFERENCE BOOKS:
1. M.K.Jain, S.R.K. Iyengar, R.K. Jain, "Numerical Methods", New age International(P), Ltd, 2012, ISBN: 978-81-224-3323-4.
2. Richard L. Burden, J. Donglas Faires, "Numerical Analysis", Richard Stratton, ISBN-13: 978-0-538-73564-3. ISBN-10: 0-538-73564-3.

(13CS101) COMPUTER PROGRAMMING

Program: B.Tech   Lecture   : 3/Week
Year: I   Tutorial : 1/Week
Sem : II   Practical :   -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the components of Computer Systems and different peripheral units.
2. To understand the fundamental concepts of computer languages.
3. To learn the concepts of programming logic development.
4. To acquire the problems solving skills through computer programming.
5. To train the students to develop computer programs with simple logic to complex logic.
6. To gain proficiency in a computer language such as "C" and develop programs to solve any kind of problem.

COURSE OUTCOMES:
The students will be able to
1. Accomplish the designing steps of a program.
2. Apply programming concepts to design structured programs.
3. Solve any kind of problem using C language.
4. Develop efficient programs.

UNIT – I
Computer Fundamentals: Introduction – Evolution of Computers – Generations of Computer Classification of Computers – Application of Computers - Components of a Computer System – Hardware - Software - Starting a Computer (Booting) – Number Systems.

UNIT-II
Computer Progrmming and Languages: Introduction - Problem-Solving Techniques: Algorithm, Flowchart, Psuedocode - Program Control Structures – Programming Paradigms – Programming languages – Generations of Programming, Running, Debugging, and Testing Programs.

Basic C Data Types and Declaration: Elementary C Programming using Expressions, Input and output statements, The flow of control using Conditional statements: if, switch statements, Iterative Statements: for, while, do-while, Unconditional Branching: break, continue and go to statements.

UNIT-III
Designing Structured Programs: Functions- basics, user defined functions, inter function communication, Standard functions, Scope, Storage classes-auto, register, static, extern, scope rules, type qualifiers, recursion- recursive functions, Pre-processor commands, example C programs.

Arrays: concepts, declaration, definition, accessing elements, storing elements, arrays and functions, two-dimensional and multi-dimensional arrays.

UNIT-IV
Strings: Concepts, C Strings, String Input / Output functions, arrays of strings, string manipulation functions.

Pointers: concepts, initialization of pointer variables, pointers and function arguments, address arithmetic, Character pointers and functions, pointers to pointers, pointers and multidimensional arrays, dynamic memory management functions,   command line arguments.

UNIT-V
Structures: Declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, typedef.

Input and Output: Concept of a file, text files and binary files, streams, standard I/O, Formatted I/O, file I/O operations, error handling.

TEXT BOOKS:
1. Pradeep K.Sinha, Priti Sinha ”Computer Fundamentals: Sixth Edition” BPB Publications, New   Delhi, 2004, ISBN:9788176567527
2. B.A. Forouzan and R.F. Gilberg "Computer science A structured programming approach using C" Third edition, Thomson.

REFERENCE BOOKS:
1. Mullish Cooper, The Spirit of C : Jaico Publishing House, 1998, ISBN:8172240406, 9788172240400
2. B.W. Kernighan, Dennis M.Ritchie, The C Programming Language, PHI/Pearson Education, ISBN:0-13-110362-8

WEB LINKS:
1. http://nptel.iitm.ac.in
2. www.pdfplace.net/online-pdf/forouzan.html

(13HS110) ENGLISH LANGUAGE LABORATORY

Program: B.Tech   Lecture   : -
Year : I   Tutorial : -
Sem : II   Practical : 3/Week
Int. Max Marks: 25   Credits   : 2
Ext. Max Marks: 50

COURSE OBJECTIVES:
1. To understand the importance of using appropriate language to complete the task.
2. To improve speaking and listening for real life situations.
3. To demonstrate techniques for creating interest and impart ones style and personality.
4. To speak fluently with correct rhythm, including the correct placement of stresses.
5. To develop logical thinking.
6. To deliver effective presentations.

COURSE OUTCOMES:
The students will be able to:
1. Develop the language prefacing of the students in English.
2. Develop the study skills and communication skills in formal and informal situations.
3. Speak in real life situations.
4. Understand the usage of appropriate language to complete different tasks at the professional level.

UNIT - I
1. Self Introduction
2. Description of people and places, situations
3. Introduction to Phonetics, Speech Sounds, Word Accent, Rhythm and Intonation

UNIT - II
1. Improvement of Sentences
2. Sentence formation-Usage of Appropriate language
3. Logical Sequence of sentences-Practice

UNIT - III
1. Situational Dialogues
2. Role Plays

UNIT - IV
1. Oral Presentations
2. JAM (Just a Minute Round)
3. Extempore and Public Speaking

UNIT - V
1. Group Discussions
2. Debates

REFERENCE SOFTWARE FOR LAB:

Cambridge advanced Learners Dictionary (With CD)

1. "Cambridge advanced learners dictionary"- 4th Edition, 25th April 2013. ISBN No.: 9781107619500.
2. Nancy Gallagher, "Delta to the next generation TOFEL Text", Delta Publishers, 2005, ISBN No.: 1887744940.

(13HS112) ENGINEERING CHEMISTRY LABORATORY

Program: B.Tech   Lecture   : -
Year: I   Tutorial   : -
Sem : II   Practical : 3/Week
Int. Max Marks: 25   Credits   : 2
Ext. Max Marks: 50

COURSE OBJECTIVES:
1. To create awareness regarding laboratory performance among engineers.
2. To acquire basic knowledge of volumetric analysis like acid base and complexometric titrations.
3. To learn compatibility procedures and upgrade the knowledge of chemical analysis and instrumentation techniques.
4. To learn the nature of electro chemical reactions and corrosion of metals.
5. To know about the fundamentals of water analysis like Hardness.
6. To learn instrumentation techniques like conductivity meter, colorimetry which are helpful to the students.

COURSE OUTCOMES:
The students will be able to:
1. Conduct experiments using test rigs which will empower them for research and development in allied fields like material science etc.
2. Develop comprehensive knowledge of theory and practice of instrumental methods used in chemistry laboratory.
3. Use the instrumental techniques like conductivity meter, potentiometer to study the end of the reactions.
4. Develop the knowledge of laboratory skills.

LIST OF EXPERIMENTS:
1. Introduction to Laboratory
2. Determination of Alkalinity of the given water sample
3. Determination of hardness of water by EDTA method
4. Estimation of Calcium in limestone by Permanganometry
5. Titration of strong acid Vs strong base by Conductometric method
6. Titration of strong acid Vs strong base by Potentiometric method.
7. Titration of strong acid Vs strong base by pH metry.
8. Estimation of manganous in potassium permanganate by colorimetry.
9. Estimation of ferrous/ferric ion dichrometry.
10. Estimation of available chlorine in bleaching powder.

REFERENCE BOOKS:
1. Gurudeep Raj, "Physical Chemistry", GOEL Publishing house.
2. Y. Bharathi Kumari, Ch.Jyostna, "Practical Engineering Chemistry"- VGS Publishers, 5-6-39/3, Second Floor, Behind Sairam Theatre, Vijayawada- 520009.

(13CS102) COMPUTER PROGRAMMING LABORATORY

Program: B.Tech   Lecture   : -
Year: I   Tutorial : -
Sem : II   Practical : 3/Week
Int. Max Marks: 25   Credits   : 2
Ext. Max Marks: 50

COURSE OBJECTIVES:
1. To learn the proficiency in a programming language.
2. To solve the problems by developing C programs.
3. To learn linear and non linear data structures such as lists, stacks, queues, trees and graphs.
4. To develop and design strtructured programs.
5. To manage a file efficiently in C program.
6. To develop efficient programs using C.

COURSE OUTCOMES:
The students will be able to:
1. Accomplish the design of any program
2. Expose the logic steps of a program
3. Solve any type of problem through programming skills
4. Design structured applications of linear and non-linear type.

RECOMMENDED SYSTEMS/SOFTWARE REQUIREMENTS:
1.   Intel based desktop PC
2.   ANSI C Compiler with Supporting Editors

Week l:
1.   The Student is expected to aware the structure and basic components of a computer.
2.   Basic OS fundamentals to work with Computer system using DOS and UNIX Commands.

Week 2:
1.   Develop flowcharts for simple problems using raptor software and open source tools
2.   Write the algorithmic procedures for the simple problems

Week 3:
1.   Write a C program to find the sum of n natural numbers
2.   Write a C program to find the sum of even and odd numbers
3.   Write a C program toe find the roots of a quadratic equation

Week 4:
1.   Write a C program to find out whether the number is odd or even?
2.   Write a C program to determine the number is prime or not?
3.   Write a C program to determine the Armstrong number?
4.   Write a C program to find the sum of individual digits of a positive integer.

Week 5:
1. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
2. Write a C program to calculate the following Sum:
3. Sum=$1-x^2/2! +x^4/4!-x^6/6!+x^8/8!-x^{10}/10!$
4. Write a C program to construct a pyramid of numbers.

Week 6
 a) Write C programs that use both recursive and non-recursive functions
     i. To find the factorial of a given integer.
     ii. To find the GCD (greatest common divisor) of two given integers.
b) Write a C program to generate Pascal's triangle.

Week 7
1. Write a C program, which takes two integer operands and one operator form the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)
2. Write a C program to find both the largest and smallest number in a list of integers.
3. Write a C program that uses functions to perform the following:
     i.   Addition of Two Matrices
     ii.   Multiplication of Two Matrices

Week 8
1. Write a C program that uses functions to perform the following operations:
     i.   To insert a sub-string in to given main string from a given position.
     ii.   To delete n Characters from a given position in a given string.
2. Write a C program to determine if the given string is a palindrome or not
3. Write a C program to count the lines, words and characters in a given text.

Week 9
Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression: $1+x+x^2+x^3+\ldots\ldots\ldots+x^n$. For example: if n is 3 and x is 5, then the program computes 1+5+25+125. Print x, n, the sum Perform error checking. For example, the formula does not make sense for negative exponents – if n is less than 0. Have your program print an error message if n<0, then go back and read in the next pair of numbers of without computing the sum. Are any values of x also illegal? If so, test for them too.

Week 10
1. 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.
2. Write a C program to convert a Roman numeral to its decimal equivalent.

Week 11
Write a C program that uses functions to perform the following operations:
1. Reading a complex number
2. Writing a complex number

3. Addition of two complex numbers
4. Multiplication of two complex numbers

(Note: represent complex number using a structure.)

Week 12
1. Write a C program which copies one file to another.
2. Write a C program to reverse the first n characters in a file.

(Note: The file name and n are specified on the command line.)

REFERNCE BOOKS
1. Brian W Kernighan, Dennis M Ritchie "The C Programming Langauage" Prentice Hall, 1988,ISBN:0-13-10362-8
2. Herbert Schildt "C: The Complete Reference" TMH, 4th Edition, ISBN: 9780070532465.

WEB LINKS:
1. http://nptel.iitm.ac.in
2. www.pdfplace.net/online-pdf/forouzan.html
3. www.scribd.com/doc/.../Computer-Programming-and-Data-Structure

(13HS215) PROBABILITY AND STATISTICS

Program: B.Tech   Lecture   : 3 /Week
Year: II   Tutorial : 1 /Week
Sem : I   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn Permutations and Combination
2. To learn Baye's theorem and its applications
3. To understand Probability distributions and applications related to engineering.
4. To learn Test of hypothesis and all related topics
5. To learn correlation and regression
6. To develop innovations for the use of statistics in decision making in various applications.

COURSE OUTCOMES:
The students will be able to
1. Apply the concepts of Probability and Statistics in solving practical engineering problems
2. Use the knowledge in Research, Industries and Business.
3. Use the knowledge of probability and statistics in modeling engineering problems.
4. Solve the industry related problems using Testing of Hypothesis.

UNIT-I
Probability: Sample space – events – Probability – The axioms of probability – Some Elementary theorems - Conditional probability – Baye's theorem.

UNIT-II
Random Variables and Distributions: Discrete and continuous Random Variables – Distributions – Distribution function – Binomial, Poison and Normal distributions.

UNIT-III
Sampling Distribution and Testing of Hypothesis-I: Sampling distribution – Populations and samples – Sampling distributions of mean (known and unknown) – Proportions – Sums and Differences – t -distribution – F-distribution – χ^2 -distribution – Test of Hypothesis – Null Hypothesis – Alternative Hypothesis – Type1 and Type2 errors – One tailed and two tailed tests – Critical Region – Testing of Hypothesis concerning one and two Means (small and large samples).

UNIT-IV

Testing of Hypothesis-II and Estimation: Testing of Hypothesis concerning one, two and several Proportions (small and large samples) – χ^2 -test – Estimation: Point estimation – interval estimation – Estimation of Means and Proportions.

UNIT-V

Correlation and Regression: Definitions – Correlation co-efficient – Karl Pearson's coefficient of Correlation – Spearman's Rank correlation coefficient – Regression – Regression equation of X on Y – Regression equation of Y on X (only linear).

TEXT BOOKS:

1. Richard Arnold Johnson, Irwin Miller, John E. Freund, "Miller and Freund's Probability and Statistics for Engineers", Prentice Hall PTR, 2011. ISBN: 0321694988, 9780321694980.
2. B.S.Grewal, "Higher Engineering Mathematics", Khanna Publishers, 2-B Nath Market, Nai Sarak, Delhi-110006, India. ISBN: 81-7409-195-5.

REFERENCE BOOKS:

1. Murray R. Spiegel, John J. Schiller, A. Alu Srinivasan, "Schanm's outline of theory and problems of Probability and Statistics", Mcgraw Hill Professional, 2000. ISBN: 0071350047, 9780071350044.
2. William Mendenhall, J. Beaver, M. Beaver, "Introduction to Probability and Statistics", Richard Stratton, USA. ISBN:-13: 978-1-133-10375-2. ISBN-10: 1-1333-10375-8.

(13HS216) ECONOMICS AND FINANCE FOR ENGINEERS

Program: B.Tech   Lecture   : 3/Week
Year: II   Tutorial : 1/Week
Sem : I   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the basic principles of Economics and Demand Forecasting.
2. To understand concept of Production and Cost Analysis.
3. To understand different Methods of Pricing,   Pricing Policies and Market structures.
4. To understand Accounting Practices and Entry formats.
5. To analyze Final Accounts for Business decision making.
6. To understand the significance of Capital and Working Capital and methods of raising finance.

COURSE OUTCOMES:
The students will be able to
1. Forecast the demand for product / service for a profitable Business administration.
2. Minimize the cost incurred in Production of a good / service and estimate the profit zone.
3. Get equipped with entry formats with reference to Indian Accounting Practices / Principles and able to valuate share pricing.
4. Identify alternate sources of Finance and to decide on the best Capital structure

Codes/Tables : Present Value Tables need to be permitted into the examination Hall.

UNIT – I
Introduction to Managerial Economics: Definition, Nature and Scope of Managerial Economics – Demand Analysis: Demand Determinants, Law of Demand and its exceptions - Elasticity of Demand: Definition, Types, Measurement and Significance of Elasticity of Demand, Demand forecasting, Factors governing demand forecasting, methods of demand forecasting

UNIT – II
Theory of Production and Cost Analysis: Production Function – Isoquants and Isocosts, MRTS, Least Cost Combination of Inputs, Cobb-Douglas Production function, Laws of returns, Internal and External Economics of Scale - Cost Analysis: Cost concepts - Break-Even Analysis (BEA) -   Determination of Break-Even Point (Simple problems) – Managerial significance and limitations of BEA

UNIT – III
Introduction to Markets and Pricing Policies:
Market structures - Types of competition, Features of Perfect competition, Monopoly and Monopolistic Competition - Objectives of Pricing and Methods of Pricing - Price-Output Determination in case of Perfect Competition and Monopoly.

UNIT – IV
Introduction to Financial Accounting: Double-Entry Book Keeping, Journal, Ledger, and Trial Balance – Final Accounts (Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments). Financial Analysis through ratios: Computation, Analysis and Interpretation of Liquidity Ratios, Activity Ratios, Capital structure ratios and Profitability ratios

UNIT – V
Capital and Capital Budgeting: Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising finance - Nature and scope of capital budgeting, features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR) and Net Present Value Method (simple problems).

TEXT BOOKS:
1. Aryasri: Managerial Economics and Financial Analysis, 3/e, TMH, New Delhi 2007, ISBN-13: 978–00-7007-803-3.
2. M.Kasi Reddy and S. Saraswathi: Managerial Economics and Financial Accounting, Prentice-Hall of India Pvt. Ltd, New Delhi, ISBN – 978-81-2033-321-5

REFERENCE BOOKS:
1. S. A. Siddiqui and A.S. Siddiqui: Managerial Economics and Financial analysis, New age International Publications, New Delhi, 2005, ISBN : 978-81-2241-609-1
2. V.S. Bagad: Managerial Economics and Financial Analysis, Technical Publications, Pune, 2008, ISBN: 978-81-8431-159-4

(13CS203) DATA STRUCTURES

Program: B.Tech   Lecture   : 4/Week
Year: II   Tutorial : 1/Week
Sem : I   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the concepts of Object Oriented Programming (OOP).
2. To understand the linear and non_ linear data structures.
3. To learn the advanced data structures.
4. To understand the fundamental graph theory to build data structures.
5. To understand the importance of advanced data structures in developing dynamic data structures.
6. To understand step by step procedure and algorithms to give solutions for the real world problems through data structures.

COURSE OUTCOMES:
The students will be able to
1. Design and develop efficient C++ programs.
2. Apply and implement the algorithmic design techniques and data structures to solve any kind of problem.
3. Apply, analyze, design and implement the optimized techniques for the real world problems.
4. Design the ADT's and advanced data structures and its implementation.

UNIT - I
C++ Class Overview- Class Definition, Objects, Class Members, Access Control, Class Scope, Constructors and destructors, parameter passing methods, inline functions, static class members, this pointer, friend functions, dynamic memory allocation and deallocation (new and delete), exception handling. Function Overloading, Operator Overloading, Generic Programming- Function and class templates, Inheritance basics, base and derived classes, inheritance types, base class access control, runtime polymorphism using virtual functions, abstract classes, streams I/O.

UNIT - II
Introduction to data structures, Static versus dynamic memory management, Classification of Data Structures, ADT, Performance analysis – Time and Space Complexity. Stack – Model, Representation, Operations, Implementations using Arrays and Linked List and Applications. Types of queues – Linear Queue, Circular Queue, Double Ended Queue, Priority Queue, Implementations using Arrays and Linked Lists, Operations and Applications. Linked List-Singly, circular, doubly, doubly and circular, Operations, Implementation and Applications

UNIT - III
Trees – Basic Terminology: Binary Trees – Definition, Representation, Operations, Implementation and Traversals. Binary Search Tree – Definition, Representation, Operations,

Implementation and Traversals. AVL Trees, Definition, Height of an AVL Tree, Operations – Insertion, Deletion and Searching.

UNIT - IV

Graphs- Basic terminology, Graph Types - representation, graph traversals- DFS and BFS, Spanning Trees, Minimum spanning Tree, The basic Greedy Strategy for computing Algorithm of Kruskal, and Prim's Applications of Graphs: Shortest path and Longest Path Problems

UNIT - V

Advanced Data Structures: Hashing, hash table representation, hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing.B-Trees: B-Tree of order m, height of a B-Tree, insertion, deletion and searching, B+-Trees, B*-Trees. Priority Queue using Heaps, Definition, insertion, Deletion, External Sorting- Model for external sorting, Multiway merge, Polyphase merge.

TEXT BOOKS:
1. Ellis Horowitz, Sartaj Sahani, Dinesh Metha, "Fundamentals of data Structures in C++", Galgotia Publications Pvt. Ltd., ISBN 81-7515-27, 2003.
2. Mark Allen Weiss, "Data structure and algorithm analysis in C++", 2nd Edition, Pearson Education, ISBN 81-2808-670-0.

REFERENCE BOOKS:
1. Herbert Schildt, "C++, The Complete Reference", TMH, 4th Edition, ISBN: 9780070532465.
2. D. Samanta, "Classic Data Structures", Prentice Hall India, ISBN 81-203-1874-9, 2002.

WEBLINKS:
1. http://www.nptel.iitm.ac.in
2. www.wits.ac.in/pdf
3. www.nalanda.nitc.ac.in/libnew/book-13-05-05.html

(13CS204) COMPUTER SYSTEM ARCHITECTURE

Program: B.Tech   Lecture   : 4/Week
Year: II   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the basic structure and operational units of Computer systems.
2. To learn about Computer Binary Arithmetic operations.
3. To understand the Memory heirarchy.
4. To understand the working of operational units.
5. To learn the instructions, their design and implementation.
6. To understand the advancements in designing various processing techniques.

COURSE OUTCOMES:
The students will be able to
1. Apply computer hardware to design multiprocessing systems.
2. Emphasize on the major components of a computer including CPU, memory,I/O and storage.
3. Design an instruction set including processors.
4. Apply interconnection structures, arbitration, synchronization, coherence concepts, and vector processing to design multiprocessor systems.

UNIT – I
Basic Structure of Computers: Computer Types, Functional unit, Basic operational concepts, Bus structures, Software, Performance, multiprocessors and multi computers. Data Representation. Fixed Point Representation. Floating – Point Representation. Error Detection codes. REGISTER TRANSFER LANGUAGE AND MICROOPERATIONS: Register Transfer language. Register Transfer Bus and memory transfers, Arithmetic Mircro-operatiaons, logic micro operations, shift micro operations, Arithmetic logic shift unit. Instruction codes. Computer Registers Computer instructions– Instruction cycle. MEMORYREFERENCE INSTRUCTIONS: Input – Output and Interrupt. Stack organization. Instruction formats. Addressing modes. DATA Transfer and manipulation. Program control. Reduced Instruction set computer.

UNIT - II
Micro Programmed Control: Control memory, Address sequencing, micro program example, design of control unit Hardwired control. Micro programmed control COMPUTER ARITHMETIC: Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – point Arithmetic operations. Decimal Arithmetic unit Decimal Arithmetic operations.

UNIT – III
The Memory System: Basic concepts semiconductor RAM memories. Read-only memories Cache memories performance considerations, Virtual memories secondary storage. Introduction to RAID.

Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer Modes of Transfer, Priority Interrupt Direct memory Access, Input –Output Processor (IOP) Serial communication; Introduction to peripheral component, Interconnect (PCI) bus. Introduction to standard serial communication protocols like RS232, USB, and IEEE1394.

UNIT – IV
Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline Vector Processing, Array Processors.

UNIT – V
Multi Processors: Characteristics or Multiprocessors, Interconnection Structures, Interprocessor Arbitration. Interprocessor Communication and Synchronization Cache Coherance. Shared Memory Multiprocessors.

TEXT BOOKS:
1. Carl Hamacher, Zvonks Vranesic, SafeaZaky, "Computer Organization"-5th Edition, McGraw Hill.
2. M.Moris Mano, "Computer Systems Architecture", -3rd Edition, Pearson/PHI, ISBN:10:0131755633

REFERENCE BOOKS:
1. John L. Hennessy and David A. Patterson, "Computer Architecture a quantitative approach", 4th Edition Elsevier,ISBN:10:0123704901
2. William Stallings, "Computer Organization and Architecture", 6th Edition, Pearson/PHI,ISBN:10:0-13-609704-9

WEB LINKS:
1. http://nptel.iitm.ac.in
2. http://dspace.sngce.ac.in/bitstream/123456789/676/5/computer%20organization.pdf

(13EE210) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Program: B.Tech   Lecture   : 3/Week
Year: II   Tutorial   : 1/Week
Sem : I   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. Learn electric circuit laws and network theorems with D.C. and A.C. excitations and solve electric circuits.
2. Calculate a.c. quantities and draw phasor diagrams.
3. Learn the operation and performance of transformers
4. Know the use and characteristics of d.c machines
5. Learn the characteristics of semiconductor diodes and their applications
6. Understand the applications of bipolar junction transistors

COURSE OUTCOMES:
The students will be able to:
1. Identify different parts of a DC machine and calculate the losses.
2. Draw the phasor diagrams of a transformer and analyze the equivalent circuit
3. Design a rectifier circuit and select a suitable filter
4. Select a suitable bias circuit for the BJT amplifier

UNIT - I
Introduction to Electrical Engineering and Network analysis-Ohm's Law, basic circuit components, Kirchhoff's Laws, Simple problems. Network Analysis: Basic definitions, types of elements, types of sources, resistive networks, inductive networks, capacitive networks, series parallel circuits, star delta and delta star transformation. Network theorems, Superposition, Thevenin's Maximum power transfer theorems and simple problems.

UNIT - II
Alternating Quantities-Principle of ac voltages, waveforms and basic definitions root mean square and average values of alternating currents and voltage, form factor and peak factor, phasor representation of alternating quantities, the J operator and phasor algebra, analysis of ac circuits with single basic network element, single phase series circuits, concept of power factor, Real and Reactive powers – J-notation, Complex and Polar forms of representation, Complex power.

UNIT - III
Transformers and DC Machines-Principles of operation, Constructional Details, Ideal Transformer and Practical Transformers, Losses, Transformer Test, Efficiency and Regulation Calculations (All the above topics are only elementary treatment and simple problems). Construction and operation of DC Generator, EMF equation, DC Motor operation.

UNIT - IV
Diode, Rectifiers and Filters-Qualitative Theory of p-n Junction, p-n Junction as a Diode, Diode Equation, Volt-Ampere Characteristics, Temperature dependence of VI characteristics, Ideal versus Practical – Resistance levels (Static and Dynamic), Transition and Diffusion Capacitances, Diode Equivalent Circuits, Load Line Analysis, Breakdown Mechanisms in Semi Conductor Diodes, Zener Diode Characteristics. The p-n junction as a Rectifier, Half wave Rectifier, Full wave Rectifier, Bridge Rectifier, Harmonic components in a Rectifier Circuit, Inductor Filters, Capacitor Filters, L-Section Filters, TT -Section Filters, Comparison of Filters, Voltage Regulation using Zener Diode.

UNIT - V
Bipolar Junction Transistor, Biasing and Stabilization-The Junction Transistor, Transistor Current Components, Transistor as an Amplifier, Transistor Construction, BJT Operation, BJT Symbol, Common Base, Common Emitter and Common Collector Configurations, Limits of Operation, BJT Specifications. Operating Point, The DC and AC Load lines, Need for Biasing, Fixed Bias, Collector Feedback Bias, Emitter Feedback Bias, Collector – Emitter Feedback Bias, Voltage Divider Bias, Bias Stability, Stabilization Factors, Stabilizations against variations in VBE and β, Bias Compensation using Diodes and Transistors, Thermal Runaway, Thermal Stability.

TEXT BOOKS:
1. A. Chakrabarthy, "Electric Circuits", Dhanpat Rai and Sons
2. M.S. Naidu and S. Kamakshaiah, "Basic Electrical Engineering", TMH Publication

REFERENCE BOOKS:
1. Hughes, "Basic Electrical Engineering", Pearson Edition
2. J. Millman, C.C. Halkias, and Satyabrata Jit, "Millman's Electronic Devices and Circuits", 2ed., 1998, TMH.

(13CS205) MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

Program: B.Tech   Lecture : 4/Week
Year: II   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the mathematical logic with concepts of truth tables, normal forms and quantifiers.
2. To learn the predicates and rules of inference for automatic theorem proff.
3. To learn the set theory and lattice systems.
4. To understand the algebraic structures, elementary combinatory for making proff for the mathematical principles.
5. To learn the recurrence relations and its characteristics.
6. To understand the concepts of Graph Theory.

COURSE OUTCOMES:
The students will be able to
1. Analyze the problem and identify the structures required to generate the mathematical solution.
2. Apply the mathematical logic , predicate rules to design an abstract system for theorem proof.
3. Apply mathematical foundations, algorithmic principles in modelling and design in computer based system.
4. Apply design and develop the logic based systems.

UNIT - I
Mathematical Logic: Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms.
Predicates: Predicative logic, Free and Bound variables, Rules of inference, Consistency, proof of contradiction, Automatic Theorem Proving

UNIT - II
Set Theory: Properties of binary Relations, equivalence, compatibility and partial ordering relations, Hasse diagram. Functions: Inverse Function Comports of functions, recursive Functions, Lattice and its Properties, Pigeon hole principles and its application.
Algebraic structures: Algebraic systems Examples and general properties, Semi groups and monads, groups sub groups' homomorphism, Isomorphism.

UNIT - III
Elementary Combinatory: Basis of counting, Combinations and Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, the principles of Inclusion – Exclusion.

UNIT - IV

Recurrence Relation: Generating Functions, Function of Sequences Calculating Coefficient of generating function, Recurrence relations, Solving recurrence relation by substitution and Generating funds. Characteristics roots solution of In homogeneous Recurrence Relation.

UNIT - V

Graph Theory: Representation of Graph, DFS, BFS, Spanning Trees, planar Graph.Graph Theory and Applications, Basic Concepts Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers

TEXT BOOKS:

1. Ralph. P.Grimaldi "Discrete and Combinational Mathematics- An Applied Introduction", 5th Edition Pearson Education,ISBN:9780201726343
2. Trembly J.P. and Manohar .P, "Discrete Mathematical Structures with Applications to computer Science", TMH,ISBN:10:0835913910

REFERENCE BOOKS:

1. Bernand Kolman, Roberty C. Busby, Sharn Cutter Ross, "Discrete Mathematical Structures", Pearson Education / PHI.
2. J.L. Mott, A. Kandel, T.P. "Discrete Mathematics for Computer Scientists and Mathematicians", Baker Prentice Hall.

WEB LINKS:

1. www.mitskodad.ac.in/cse.pdf
2. http://nptel.iitm.ac.in
3. www.findpdf.net/.../about-Discrete-Mathematical-Structures-with-app

(13CS211) DATA STRUCTURES LABORATORY

Program: B.Tech	Lecture : -
Year: II	Tutorial : -
Sem : I	Practical : 3/Week
Int. Max Marks: 25	Credits : 2
Ext. Max Marks: 50	

COURSE OBJECTIVES:
1. To aware the concepts of Abstract Data Types (ADT) for all kinds of data structures.
2. To learn about object oriented programming concepts.
3. To learn C++ programming to represent different kinds of data structures.
4. To learn different types of tree structures and text processing to represent the data in efficient way.
5. To learn different graph traversals.
6. To understand the applications of data structures in real world.

COURSE OUTCOMES
The students will be able to
1. Design and develop efficient structured C++ programs.
2. Apply and implement the design techniques and data structures to solve any kind of problem using C++
3. Apply, analyze, design and implement the linear and non-linear data structures.
4. Design the ADT's and advanced data structures and its implementation using C++

Week- 1:
Write a program that uses functions to perform the following operations on singly linked list:
   i) Creation ii) Insertion   iii) Deletion   iv) Traversal

Week- 2:
Write a program that uses functions to perform the following operations on Circular linked list:
   i) Creation ii) Insertion   iii) Deletion   iv) Traversal

Week- 3:
Write a program that uses functions to perform the following operations on Doubly linked list:
   i) Creation ii) Insertion   iii) Deletion   iv) Traversal in both ways.

Week- 4:
Write a program that uses functions to perform the following operations on Circular Doubly linked list:
   i) Creation ii) Insertion   iii) Deletion   iv) Traversal.

Week- 5:
Write a program that implement stack (its operations) using
   i) Arrays   ii) Pointers
Week- 6:

Write a program that uses Stack operations to perform the following:
      i) Converting infix expression into postfix expression
      ii) Evaluating the postfix expression

Week- 7:
Write a program that implement Queue (its operations) using
  i) Arrays   ii) Pointers

Week- 8:
Write a program that implement DeQueue (its operations) using
  i) Arrays   ii) Doubly Linked List

Week- 9:
Write a program to perform the following operations on Binary Search Tree
  i) Insertion.   ii) Deletion   iii)Traversal(Recursive)

Week- 10:
Write a program to represent a given graph in adjacency matrix and linked list.

Week- 11:
Write a program to implement   BFS and DFS algorithms for a given graph.

Week- 12:
Write a program to implement Kruskal's and Prim's algorithms to generate a minimum cost spanning tree.

REFERENCE BOOKS:
1. Herbert Schildt "C++ The Complete Reference", TMH 4th Edition ISBN:9780070532465
2. M. A. Weiss "Data Structures and Algorithm Analysis in C", Pearson Education Asia, 2nd ed 2002,ISBN:0-13-919424

WEB LINKS:
1. www.nalanda.nitc.ac.in/libnew/book-13-05-05.html
2. http://nptel.iitm.ac.in
3. www.wits.ac.in/pdf
4. http://www.ebooks.com

(13EE215) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY

Program: B.Tech   Lecture : -
Year: II   Tutorial : -
Sem: I   Practical : 3/Week
Int. Max Marks: 25   Credits : 2
Ext. Max Marks: 50

COURSE OBJECTIVES:
1. Know the steps used for verification of circuit theorems
2. Understand the characteristics of DC shunt generator
3. Know the steps used for predetermination of efficiency of DC machine and transformer
4. Learn the brake test for determining efficiency of DC motor
5. Understand the characteristics of diodes and transistor
6. Learn the use of filters in rectifier circuits

COURSE OUTCOMES:
The students will be able to:
1. Find the impedance for maximum power theorem and will be in a position to design the systems for maximum power transformation.
2. Conduct experiment to determine the performance of DC shunt machine
3. Conduct suitable tests on transformer to determine the efficiency and regulation.
4. Conduct experiment and plot the characteristics of diodes and transistors

PART –A
1. Verification of Superposition and Reciprocity theorems
2. Verification of Maximum power transfer theorem. Verification on DC with resistive Load
3. Experimental determination of Thevenin's and Nortons theorems
4. Magnetization characteristics of DC Shunt generator
5. Swinburne's Test on DC shunt machine (Predetermination of efficiency of a given DC shunt machine working as motor and generator)
6. Brake test on DC shunt motor. Determination of performance characteristics.
7. OC and SC tests on Single phase transformer (Predetermination of efficiency and regulation at given power factors)
8. Brake test on 3-Phase Induction motor (Performance characteristics)

PART- B
1. PN Junction Diode characteristics (Forward bias, Reverse bias)
2. Zener Diode characteristics
3. Transistor CE characteristics (Input and Output)
4. Rectifier without Filters (Full wave and Half wave)
5. Rectifier with Filters (Full wave and half wave)

(13CS206) PRINCIPLES OF PROGRAMMING LANGUAGES

Program: B.Tech   Lecture   : 3/Week
Year: II   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the Preliminary Concepts of principles of programming languages.
2. To learn the Syntax, Semantics and control structures as building blocks of programming languages.
3. To aware ADT's for various kinds of programming languages.
4. To understand the elements, logic and applications of logic programming.
5. To learn the key concepts of functional, imperative and scripting languages.
6. To understand the major key components as building blocks for various kinds of programming languages.

COURSE OUTCOMES:
The students will be able to
1. Apply the building blocks to model a programming languages.
2. Apply data types, syntax and semantics, sub programming and blocks, ADT's , design and develop various kinds of programming languages.
3. Have an exposure to implement the applications of various programming languages.
4. Obtain the model and design the programming constructs of various programming languages.

UNIT - I
Preliminary Concepts: Reasons for studying, concepts of programming languages, Programming domains, Language Evaluation Criteria, influences on Language design, Language categories, Programming Paradigms: Imperative, Object Oriented, functional Programming, Logic Programming. Programming Language Implementation, Compilation and Virtual Machines, Programming environments. Syntax and Semantics: general Problem of describing Syntax and Semantics, formal methods of describing syntax, BNF, EBNF for common programming languages features, parse trees, ambiguous grammars, attribute grammars, Denotation semantics and axiomatic semantics for common programming language features.

UNIT - II
Data Types: Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization. Expressions and Statements: Arithmetic relational and Boolean expressions, Short circuit evaluation mixed mode assignment, Assignment Statements, Control Structures: Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

UNIT - III
Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions user defined overloaded operators, co routines.

UNIT - IV
Abstract Data Types: Abstractions and encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT, object oriented programming in small talk, C++, Java, C#, Ada 95, Concurrency: Subprogram level concurrency, semaphores, monitors, massage passing, Java threads, C# threads. Exception handling: Exceptions, exception Propagation, Exception handler in Ada, C++ and Java. Logic Programming Language: Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

UNIT - V
Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages. Scripting Language: Pragmatics, Key Concepts, Case Study: Python – Values and Types, Variables , Storage and Control, Bindings and Scope, Procedural Abstraction, Data Abstraction, Separate Compilation, Module Library.

TEXT BOOKS:
1. Robert W. Sebesta, "Concepts of Programming Languages", 8th Edition, Pearson Education, 2008.
2. D. A. Watt,"Programming Language Design Concepts", Wiley Dreamtech, rp-2007.

REFERENCE BOOKS:
1. A.B. Tucker, R.E. Noonan, "Programming Languages", 2nd Edition, TMH.
2. K. C.Louden, "Programming Languages" 2nd Edition, Thomson, 2003.

WEB LINKS:
1. www.pearsonhighered.com/.../Concepts-of-Programming-Languages.
2. www.wileyindia.com/upload_catalog/pdf/1219751436_pt.pdf, http://nptel.iitm.ac.in

(13CS207) THEORY OF COMPUTATION

Program: B.Tech   Lecture   : 4/Week
Year: II   Tutorial : 1/Week
Sem : II   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the fundamentals of theoretical foundations of computer science to build computable abstract systems.
2. To understand the grammer and languages to build effective computable automata systems.
3. To learn about the required grammer and eliminate ambiguity to develop optimized automata systems.
4. To understand the various catogories of automata systems.
5. To learn about the hypothesis and computable functions of turing machines.
6. To understand about computability, reducability theory for P,NP and NP hard problems.

COURSE OUTCOMES:
The student will be able
1. Apply the grammers and languages to design abstract computer machines.
2. Model the logic and solutions to decidable and undecidable problems through compatability theory.
3. Accomplish the Lemma's, Hypothesis for various languages.
4. Design deterministic and non-deterministic machines.

UNIT - I
Fundamentals: Strings, Alphabet, Language, Operations, Finite state machine, definitions, finite automaton model, acceptance of strings, and languages, deterministic finite automation and non deterministic finite automaton, transition diagrams and Language recognizers.

Finite Automata: NFA with Î transitions - Significance, acceptance of languages. Conversions and Equivalence: Equivalence between NFA with and without Î transitions, NFA to DFA conversion.

UNIT - II
Minimisation: Minimisation of FSM, equivalence between two FSM's, Finite Automata with output- Moore and Mealy machines.

Regular Languages: Regular sets, regular expressions, identity rules, Constructing finite Automata for a given regular expressions, Conversion of Finite Automata to Regular expressions. Pumping lemma of regular sets, closure properties of regular sets (proofs not required).

UNIT – III

Grammar Formalism: Regular grammars-right linear and left linear grammars, equivalence between regular linear grammar and FA, inter conversion, Context free grammar, derivation trees, sentential forms. Right most and leftmost derivation of strings.

Context Free Grammars: Ambiguity in context free grammars. Minimisation of Context Free Grammars. Chomsky normal form, Greiback normal form, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL (proofs omitted).

UNIT – IV

Push Down Automata: Push down automata, definition, model, acceptance of CFL, Acceptance by final state and acceptance by empty state and its equivalence. Equivalence of CFL and PDA, inter conversion. (Proofs not required). Introduction to DCFL and DPDA.

Turing Machine: Turing Machine, definition, model, design of TM, Computable functions, recursively enumerable languages. Church's hypothesis, counter machine, types of Turing machines (proofs not required).

UNIT - V

Computability Theory: Chomsky hierarchy of languages, linear bounded automata and context sensitive language, LR(0) grammar, decidability of, problems, Universal Turing Machine, undecidability of posts. Correspondence problem, Turing reducibility, Definition of P and NP problems, NP complete and NP hard problems.

TEXT BOOKS:
1. Hopcroft H.E. and Ullman J.D, "Introduction to Automata Theory Languages and Computation", Pearson Education.
2. Sipser, "Introduction to Theory of Computation", 2nd Edition Thomson

REFERENCE BOOKS:
1. Daniel I.A. Cohen, "Introduction to Computer Theory", John Wiley.
2. John C Martin, "Introduction to languages and the Theory of Computation", TMH.

WEB LINKS:
1. http://nptel.iitm.ac.in
2. ebookee.org/.../Introduction-to-Automata-Theory-Languages

(13CS208) OPERATING SYSTEMS

Program: B.Tech   Lecture : 4/Week
Year: II   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand functionalities of computer system and the operating system.
2. To learn about the various system calls, major key components of operating system.
3. To understand the dead lock prevention system and recovery process from the file structures.
4. To learn about the mass storage structure of an operating system.
5. To understand the mechanism for protecting the key components of an operating system.
6. To know the security aspects of the computers and operating systems.

COURSE OUTCOMES:
The students will be able
1. Apply and analyze the operating system requirements to manage the process, memory storage and file systems.
2. Expose the various key components of an operating system.
3. Accomplish the prevention of a deadlock for effective usuage of computer systems.
4. Apply, analyze and design the effective privacy and security mechanism for various kinds of operating systems.

UNIT – I
Computer System and Operating System Overview: Overview of computer operating systems operating systems functions protection and security distributed systems special purpose systems operating systems structures and systems calls operating systems generation.

Process Management: Process concepts threads, scheduling-criteria algorithms, their evaluation, thread scheduling, case studies UNIX, Linux, Windows

UNIT - II
Concurrency: Process synchronization, the critical- section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors, Synchronization examples, atomic transactions. Case studies UNIX, Linux, Windows.

Memory Management : Swapping, contiguous memory allocation, paging, structure of the page table , segmentation, virtual memory, demand paging, page-Replacement, algorithms, case studies UNIX, Linux, Windows.

UNIT - III
Principles of Deadlock: System model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock.

File system Interface: The concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection.

File System implementation: File system structure, file system implementation, directory implementation, directory implementation, allocation methods, free-space management, efficiency and performance, case studies. UNIX, Linux, Windows

UNIT - IV
Mass-Storage Structure: Mass-storage structure overview of Mass-storage structure, Disk structure, disk attachment disk scheduling, swap-space management, RAID structure, stable-storage implementation, Tertiary storage structure.

UNIT - V
Protection: Protection, Goals of Protection, Principles of Protection, Domain of protection Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability- Based systems, Language – Based Protection. **Security-** The Security problem, program threats, system and network threats cryptography as a security tool, user authentication, implementing security defenses, firewalling to protect systems and networks, computer –security classifications, case studies UNIX, Linux, Windows.

TEXT BOOKS:
1. Abraham Silberchatz, Peter B. Galvin "Operating System Concepts" Greg Gagne 7th Edition, John Wiley,ISBN:-10:04->1694665
2. Stallings, "Operating Systems – Internal and Design Principles", Fifth Edition–2005, Pearson education/PHI,ISBN:0-13-147954-7

REFERENCE BOOKS:
1. D.M.Dhamdhere "Operating systems- A Concept based Approach" 2nd Edition, TMH,ISBN:13:9780070611948
2. Andrew S Tanenbaum "Modern Operating Systems" 2nd Edition, Pearson/PHI,ISBN:-10:0132392275

WEB LINKS:
1. http://nptel.iitm.ac.in
2. www.wiley.com/college/silberschatz
3. ebookee.org/.../Operating-Systems-Internal-and-Design-Principles

(13CS209) DESIGN AND ANALYSIS OF ALGORITHMS

Program: B.Tech   Lecture   : 3/Week
Year: II   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the basic concepts of algorithm analysis, notations, time and space complexity of algorithms.
2. To learn about the methods involved for job sequencing and shortest path problems.
3. To understand the various key components of dynamic programming.
4. To learn about the key concepts involving with colouring a graph and Hamilton cycle.
5. To understand the basic concepts of computability theory and non deterministic algorithms.
6. To understand the basic concepts of design and analysis of time and space complexities

COURSE OUTCOMES:
The student will be able
1. Apply, analyze and design an efficient algorithm for any kind of problem.
2. Design efficient applications using various kinds of methods.
3. Apply and design the dynamic programs for the real time problems.
4. Analyze the complexities of simple and hard problems.

UNIT – I
Introduction - Notion of Algorithm - Fundamentals of algorithmic problem solving - Important problem types - Fundamentals of the analysis of algorithm efficiency - analysis frame work - Asymptotic notations – Big Oh Notation, Omega Notation, Theta Notation and Little Oh Notation. Disjoint sets – Union and find algorithms, spanning trees.

UNIT – II
Divide and conquer - General method, applications – binary search, quick sort, merge sort, - Strassen's matrix multiplication. Greedy method – General method, applications – job sequencing with deadlines, 0/1 Knapsack problem, minimum cost spanning trees, single source shortest path problem.

UNIT – III
Dynamic Programming - General method, applications, matrix chain multiplication, optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, traveling sales person problem, reliability design.

UNIT – IV
Backtracking – General method, applications – n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles

UNIT – V
Branch and Bound - General method, applications – travelling salesperson problem, 0/1 knapsack problem – LC Branch and bound solutions, FIFO branch and bound solutions. Np-hard and Np-complete Problems- Basic concepts, non-deterministic algorithms, NP-Hard and NP-Complete classes, Cook's Theorem.

TEXT BOOKS:
1. Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, "Computer Algorithms / C++", 2nd Edition, Universities Press, 2007.
2. Anany V. Levitin "Introduction to the Design and Analysis of Algorithms" Villanova University ©2003 ISBN: 0-201-74395-7

REFERENCE BOOKS:
1. Cormen, T.H., Leiserson, C.E., Rivest, R.L. and Stein, C., "Introduction to Algorithms", 2nd Edition, Prentice Hall of India Pvt. Ltd, 2003.
2. Aho, A.V., Hopcroft J.E. and Ullman, J.D., "The Design and Analysis of Computer Algorithms", Pearson Education, 1999.

WEB LINKS:
1. http://nptel.iitm.ac.in
2. ebookfreetoday.com/Ellis-Horowitz,-Sanguthevar-Rajasekaran
3. www.aw-bc.com/info/levitin

(13CS210) OBJECT ORIENTED PROGRAMMING CONCEPTS

Program: B.Tech   Lecture : 4/Week
Year: II   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the various features of object oriented programming.
2. To learn the features of OOP specific to Java programming.
3. To understand the components involved in designing web pages through Java programming.
4. To understand the various components of event mechanism.
5. To understand the major components of network programming through Java_Swings.
6. To understand the major key contributing components to enable web based applications through Java programming.

COURSE OUTCOMES:
The students will be able to
1. Design the framework and architecture for MVC's.
2. Apply all OOP features and design Object based applications.
3. Apply event handling mechanism to design an effective user interface.
4. Apply, analyze and design effective web enabled applications.

UNIT – I
Object Oriented Thinking: Need for oop paradigm, OOP Principles, **Java Basics** History of Java, Java buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, string handling.

UNIT - II
Inheritance: Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance. Member access rules, super uses, using final with inheritance, polymorphism- method overriding, abstract classes. **Packages and Interfaces**: Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces. **I/O Streams.**

UNIT – III

Exception Handling and Multithreadin: Concepts of exception handling, benefits of exception handling, Termination or resumptive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes. Differences between multi threading and multitasking, thread life cycle, creating threads, synchronizing threads, daemon threads, thread groups.

UNIT - IV

Applets: Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

Event Handling: Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, inner classes.The AWT class hierarchy, user interface components- labels, button, canvas, scrollbars, text components, check box, check box groups, choices, lists panels – scrollpane, dialogs, menubar, graphics, layout manager – layout manager types – boarder, grid, flow, card and grib bag.

UNIT – V

Swings: Introduction, limitations of AWT, MVC architecture, components, containers, exploring swing- JApplet, JFrame and JComponent, Icons and Labels, text fields, buttons – The JButton class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees, and Tables.

TEXT BOOKS:
1. Herbert schildt "Java the complete reference", 7th Edition, TMH,ISBN:0072263857
2. T.Budd "Understanding OOP with Java" updated Edition, pearson eduction, ISBN:10:0201612739

REFERENCE BOOKS:
1. Y. Daniel Liang "Introduction to Java programming" 6th Edition, pearson education, ISBN:10:0132221586
2. R.A. Johnson-An introduction to Java programming and object oriented application development, Thomson, ISBN:-10:0619217464

WEB LINKS:
1. www.tatamcgrawhill.com/html/9780070636774.html
2. http://nptel.iitm.ac.in

(13EC207) DIGITAL ELECTRONICS

Program: B.Tech

Lecture   : 3/Week

Year: II

Tutorial : 1/Week

Sem: II

Practical : -

Int. Max Marks: 30

Credits   : 3

Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn digital fundamentals required for digital design.
2. To learn simplifications of Boolean expressions by applying various minimization methods.
3. To learn design of various combinational circuits and PLD's.
4. To learn design of various sequential circuits and finite state machine.
5. To learn digital design using algorithmic state machines.
6. To develop the ability to design digital circuits and solve system design problems.

COURSE OUTCOME:
The students will be able to
1. Understand various number systems used in digital systems.
2. Use various reduction techniques for simplification and implementation.
3. Design combinational and sequential circuits and their realization.
4. Design digital circuits and solve problems related to digital system design

UNIT - I
Number Systems and Codes: Review of Number systems, binary arithmetic – binary weighted and non weighted codes-error detecting and error correcting codes

UNIT - II
Boolean Algebra and Simplication of Switching Functions: Postulates and theorems – Logic gates and truth tables – Representation of switching functions – SOP and POS forms – Karnaugh Map representation – Minimization using K-Map. Quine Mc'Clusky method of minimization

UNIT - III
Combinational Circuits: Design of combinational circuits using conventional AND, OR, NOT, NAND, NOR and EX-OR gates-Adders/ Subtractors: Carry Look ahead Adder, BCD Adder, Decoders: BCD to 7 segment, BCD to decimal decoder. Encoders: Priority encoder, Multiplexers, Demultiplexers, Realization of switching functions using multiplexers and decoders. Basic PLD's – ROM PROM, PLA, PAL, realization of switching functions using PLD's threshold gate

UNIT - IV
Sequential Circuits: Flip Flops – SR flip flop, JK flip flop, D flip flop, T flip flop, Excitation tables – Race around condition, Master slave flip flop, Excitation tables.
Design of Synchronous and Asynchronous counters, shift registers – Modes of operation, Bidirectional shift registers, Ring counters Johnson counters. Glitches and delay problems in counters.

UNIT - V
Synchronous Sequential Circuits and Iterative Networks: State table, state diagram, state assignment, state minimization, synthesis of synchronous, sequential circuits – sequence detectors – Binary counters

Capabilities and Minimization of Sequential Machines: Mealy and Moore Machines – Capabilities and limitations of finite state machine – state equivalence and machine minimization. ASM Chart.

TEXT BOOKS:
1. Zvi. Kohavi "Switching and Finite Automata Theory" Tata, McGraw-Hill, New Delhi
2. Taud and Schilling "Digital Integrated Circuits" Tata McGraw-Hill New Delhi

REFERENCE BOOKS:
1. Moris Mano, "Digital Logic Design", Prentice Hall of India, New Delhi
2. Samuel. C.Lee and B.S. Sonde, "Digital Circuits and Logic Design", Prentice Hall of India, New Delhi.

(13CS212) OBJECT ORIENTED PROGRAMMING CONCEPTS LABORATORY

Program: B.Tech	Lecture : -
Year: II	Tutorial : -
Sem: II	Practical : 3/Week
Int. Max Marks: 25	Credits : 2
Ext. Max Marks: 50	

COURSE OBJECTIVES:
1. To understand the OOP features to develop Object based programs.
2. To learn how effective Java programs can be made.
3. To understand the pluggins, Applets to run web applications using browsers.
4. To know the techniques for developing effective robust, reusable software.
5. To learn how to develop GUI's.
6. To understand the features of OOP specific to Java programming, which will be applied to develop web based applications.

COURSE OUTCOMES:
The student will be able to
1. Develop the applications through Java programming
2. Design web based applications
3. Expose the internet based programming
4. Develop, Design applications of OO nature

Recommended Systems/Software Requirements:
Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space JDK Kit. Recommended

Week-1:
1. Write a Java program that prints all real solutions to the quadratic equation $ax2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the descriminent (b2 -4ac) is negative, display a message stating that there are no real solutions.
2. The Fibonacci sequence is defined by the following rule:

The fist two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.

Week-2:
1. Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.
2. Write a Java program to multiply two given matrices.
3. Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (Use StringTokenizer class of java.util)

Week- 3:
1. Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.
2. Write a Java program for sorting a given list of names in ascending order.
3. Write a Java program to make frequency count of words in a given text

Week-4:
1. Write a Java program that reads a file name from the user, and then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.
2. Write a Java program that reads a file and displays the file on the screen, with a line number before each line.
3. Write a Java program that displays the number of characters, lines and words in a text file.

Week- 5:
1. Write a Java program that:
    i. Implements stack ADT.
    ii. Converts infix expression into Postfix form
    iii. Evaluates the postfix expression

Week-6:
1. Develop an applet that displays a simple message.
2. Develop an applet that receives an integer in one text field, and computes its factorial Value and returns it in another text field, when the button named "Compute" is clicked.

Week-7:
Write a Java program that works as a simple calculator. Use a grid layout to arrange Buttons for the digits and for the +, -,*, % operations. Add a text field to display the result.

Week-8:
1. Write a Java program for handling mouse events.

Week-9:
1. Write a Java program that creates three threads. First thread displays "Good Morning" every one second, the second thread displays "Hello" every two seconds and the third thread displays "Welcome" every three seconds.
2. Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.

Week-10:
Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the textfields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box.

Week-11:
Write a Java program that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result, and then sends the

result back to the client. The client displays the result on the console. For ex: The data sent from the client is the radius of a circle, and the result produced by the server is the area of the circle. (Use java.net)

Week-12:
1. Write a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time No light is on when the program starts.
2. Write a Java program that allows the user to draw lines, rectangles and ovals.

REFERENCE BOOKS:
1. H.M.Dietel and P.J.Dietel, "Java How to Program", 6th Edition, Pearson Education/PHI, ISBN:10:0132575663
2. Y.Daniel Liang, "Introduction to Java programming", 6th Edition, Pearson Education, ISBN:10:0132221586

WEB LINKS:
1. www.tatamcgrawhill.com/html/9780070636774.html
2. http://nptel.iitm.ac.in

(13EC212) DIGITAL ELECTRONICS LABORATORY

Program: B.Tech   Lecture   : -
Year: II   Tutorial : -
Sem: II   Practical : 3/Week
Int. Max Marks: 25   Credits   : 2
Ext. Max Marks: 50

COURSE OBJECTIVES:
1. To learn the operation of basic gates
2. To learn the operation of adder and subtractor circuits using basic gates and IC's
3. To learn the operation of various combinational circuits
4. To learn the operation of basic flip-flop circuits
5. To learn the operation of various sequential circuits
6. To learn the design of digital logic circuits using basic gates and IC's

COURSE OUTCOMES:
The students will be able to:
1. Understand basic gates and applications using basic gates
2. Understand the operation of various combinational circuits using basic gates and IC's
3. Understand the operation of various flip-flops, sequential circuits using basic gates and IC's
4. Develop and ability to design digital circuits and apply them in digital system design

MINIMUM TEN EXPERIMENTS TO BE CONDUCTED:
1. Logic Gates
2. Half Adder and Full Adder
3. Half subtractor and Full subtractor
4. 4-bit Binary Adder
5. Encoder
6. Decoder/Demultiplexer
7. Multiplexer
8. Flip-Flops: J-K, D and T flip-flops
9. 4-bit Ripple Counter
10. 4-bit Decade Counter
11. 4 bit shift register
12. 4 bit Ring Counter and Johnson Counter

(13HS318) TECHNICAL WRITING AND COMMUNICATION

Program: B.Tech   Lecture   : 2/Week
Year: III   Tutorial : -
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 2
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To improve standards of written communication among engineering professionals.
2. To promote best practices in technical writing and email communications.
3. To improve business presentation skills in a professional way.
4. To impart knowledge about correct ways of writing various professional documents including proposals and reports
5. To understand the importance of Group discussion and interview techniques and perform better.
6. To make students improve self confidence and get rid of stage fear.

COURSE OUTCOMES:
The student will be able to:
1. Learn and hone technical writing and business communication skills for positive impact on an individual's career advancement.
2. Learn Techniques of drafting professional documents
3. Improve public speaking, fluency and gain confidence.
4. Improve skills in participating GDs and gain confidence to face Job Interviews.

UNIT- I
Introduction and Overview to Technical Writing for Engineers
1. Overview of technical writing Process and the stages of technical writing
2. Software Development Life Cycle and Drafting SRS- Software Requirements.
3. Basics of Writing Professional Documents
4. Types of business writing- memo, business letters, business cases, minutes and agendas, media releases, business report**s.**

UNIT –II
Writing Effective E-Mails and Report Writing
1. Writing Effective e-mails
2. Report writing

UNIT –III
Business Presentation and Representing Data Visually
1. Define the situation.
2. Design the presentation.
3. Deliver the presentation.
4. Closing thoughts.
5. Guidelines on presenting visual data.
6. Different visual presentations.

UNIT- IV
Public Speaking and Interpersonal Skills
1. Introduction and Importance of Interpersonal skills
2. Communication Techniques in professional life
3. Listening Skills
4. Public Speaking techniques

UNIT- V
Group Discussions and Preparation for Job Interviews
1. The O-P-P strategy for GD
2. GD Etiquettes
3. Tips to improve GD Skills
4. Types of Interviews
5. Preparation for Interviews
6. Research of Company and Position
7. Review of Resume
8. Practicing answers of Interview Questions
9. Body Language in Interviews
10. Practice – Do's and Don'ts
11. Practice-useful tips for interviews

TEXT BOOKS:
1. Billet, C.D, "Technical Writing Today British English", - Medial Training Corporation Publication.
2. Gerald J. Alred, Charles T. Brusaw , Walter E.Oliu, "Hand Book of Technical Writing", Nineth Edition, St Marting's Press

REFERENCE BOOKS/CITES
1. ZCME Course Material
2. http://web.mit.edu/me-ugoffice/communication/technical-writing.pdf
3. http://www.web.mit.edu/cs/docs/TechnicaWriting.pdf
4. http://www.dozuki.com/Technical_Writing

(13HS319) PRINCIPLES AND PRACTICES OF MANAGEMENT

Program: B.Tech   Lecture : 3/Week
Year: III   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To equip students with basic Principles and Functions of Management
2. To equip with Key Competencies and skills for Problem-solving and Decision-making in managerial situations
3. To know about the different organisational designs and structures, and How to manage Human Resources
4. To provide a conceptual understanding on Materials, Operations and Marketing management
5. To equip about SWOT Analysis and how it helps to generate alternative corporate strategies
6. To understand the concept of Strategy and How Change can be handled

COURSE OUTCOMES:
The students will be able to
1. Possess Managerial skills needed for managing a Unit / Branch
2. Handle or coordinate with different operations / functional areas in an organisation
3. Assess the situation by critical examination and provide better decisions for the organisation
4. Foresee the dynamics of business and sense and formulate the direction of change

UNIT – I
Introduction to Management: Nature and Importance of Management, Functions of Management - Taylor's Scientific Management Theory, Fayol's Principles of Management, Maslow's Theory of Human Needs, Herzberg's Two-Factor Theory of Motivation, Douglas McGregor's Theory X and Theory Y, Systems Approach to Management, Leadership Styles.

UNIT – II
Designing Organizational Structures: Departmentation and Decentralisation - Types of Organisation structures – Line organization,   Line and staff organization, lean and flat organization structure and their merits, demerits and suitability.

Human Resources Management (HRM): Evolution of HRM, Basic functions of HR Manager - Manpower planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Performance Appraisal, Grievance Handling and Welfare Administration, Job Evaluation and Merit Rating - Cases

UNIT – III
Operations Management: Principles and Types of Plant Layout – Methods of production (Job, batch and Mass Production), Work study – Basic procedure involved in Method Study and Work Measurement

Materials Management: Objectives, Need for Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Stores Records – Supply chain management, Basic concepts of Just-in-time (JIT) System, Total Quality Management (TQM), Six sigma and Capability Maturity Model (CMM) Levels, Value Chain Analysis, Enterprises Resource Planning (ERP).

UNIT – IV
Marketing Management: Functions of Marketing, Marketing mix, marketing strategies based on Product Life cycle, New Product Development, Pricing strategies, marketing communication Mix - Sales Promotion, Advertising - Channels of distribution, Retailing, Consumer Protection Act, 1986 - Cases

UNIT – V
Strategic Management and Change Management: Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning. SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives, Business Process outsourcing (BPO), Business Process Re-engineering 5S Model, Deming's PDCA, Kaizen, Benchmarking, Balanced Score Card, Change Management and Organizational Development- Cases

TEXT BOOKS:
1. Aryasri: Management Science, TMH, New Delhi, 2009, ISBN: 978-00-7009-027-9
2. Stoner, Freeman, Gilbert: Management, 6th Ed, Pearson Education, New Delhi, 2011, ISBN: 978-01-3108-747-7

REFERENCE BOOKS:
1. Kotler Philip and Keller Kevin Lane: Marketing Mangement 12/e, PHI, New Delhi, 2005, ISBN: 978-01-3145-757-7
2. Kanishka Bedi, Production and Operations Management, Oxford University Press, 2004, ISBN: 978-01-9566-757-8

(13EC321) MICRO PROCESSORS

Program: B.Tech   Lecture   : 4/Week
Year: III   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn importance of microprocessors and microcontrollers
2. To learn and understand architecture and programming of 8086 processor.
3. To learn and understand interfacing techniques like memory and I/O Interfacing with 8086.
4. To learn and understand architecture and programming of 8051 microcontroller.
5. To learn and understand generation of time delay, serial communication and interrupts.
6. To learn and understand the development of microprocessor and microcontroller based system.

COURSE OUTCOMES:
The student will be able to
1. Understand the theory and basic architecture of microprocessor
2. Program a microprocessor system using assembly language
3. Understand and capable or interfacing the microprocessor to the I/O devices.
4. Develop simple applications on microprocessor and microcontroller -based systems.

UNIT – I
Evolution of Microprocessors, 8085 MPU Architecture.

8086 Family Architecture: Organization of 8086 CPU, Concept of Memory Segmentation, Segment registers, Physical and logical addressing, Instruction set, Addressing Modes.

UNIT – II
Assembly Language Programming: Assemble directives, simple Programming of 8086 Implementation of structures, time delays, strings, procedures, macros, pin configuration, Min/Max modes, timing diagrams.

UNIT - III
Interfacing With 8086: ADC, DAC interfacing, interfacing of switches, Keyboards, LEDs Stepper motor; interfacing through 8255.Communication interface: serial communication standards, serial data transfer schemes, 8251 USART architecture and interfacing

UNIT – IV
Interfacing with Advanced Devices: Interfacing with advanced devices memory interfacing to 8086 interrupt structure of 8086, vector interrupt table, interrupt service routine, interfacing interrupts controller 8259 DMA Controller 8257.

UNIT - V
8051 Microcontroller: Architecture, Instruction set, addressing modes, Assembly language Programming.

TEXT BOOKS:
1. D.V. Hall "Microprocessors and Interfacing" TMGH 2nd Edition 2006
2. Brey "Advanced Microprocessors", Prentice Hall of India, New Delhi Kennet Auala

REFERENCE BOOKS:
1. Kennet Ayala "8086 Microprocessor: Programming and Interfacing with PC" Penram Publications, Bombay
2. "The Microcontroller Architecture, Programming and Applications" Penram Publications, Bombay.

(13CS313) DATABASE MANAGEMENT SYSTEMS

Program: B.Tech   Lecture   : 4/Week
Year: III   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the fundamental concepts of Database Management Systems.
2. To learn about the various Database Models.
3. To learn about managing the data in the databases through SQL.
4. To understand the design of the database through decomposition and Normal Forms.
5. To understand the Database Recovery Techniques, transaction management and lock management system.
6. To learn about the various external storages for data.

COURES OUTCOMES:
The students will be able to
1. Design an effective database.
2. Develop effective queries and schema to retrieve data from database.
3. Apply the ACID properties for effective transaction management.
4. Model and design an effective internal/external storage systems.

UNIT - I
Data base System Applications, data base System VS file System – View of Data – Data Abstraction –Instances and Schemas – data Models – Database Languages –data base Users and Administrator – Transaction Management – data base System Structure.
Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model.

UNIT - II
Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views.
Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

UNIT- III
Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases.

Schema refinement – Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF –Schema refinement in Data base Design – Multi valued Dependencies – FORTH Normal Form.

UNIT –IV
Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation – Testing for serializability- Lock –Based Protocols – Timestamp Based Protocols- Validation-Based Protocols.
Recovery and Atomicity – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage-Advance Recovery systems-Remote Backup systems.

UNIT - V
Data on External Storage – File Organization and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data Structures – Hash Based Indexing – Tree base Indexing – Comparison of File Organizations – Indexes and Performance Tuning- Intuitions for tree Indexes – Indexed Sequential Access Methods (ISAM) – B+ Trees: A Dynamic Index Structure.

TEXT BOOKS:
1. Raghurama Krishnan, Johannes Gehrke " Data base Management Systems" TATA McGrawHill 3rd Edition
2. Silberschatz, Korth "Data base System Concepts" McGraw hill, V Edition.

REFERENCE BOOKS:
1. Peter Rob and Carlos Coronel "Data base Systems design, Implementation, and Management" 7th Edition.
2. Elmasri Navrate "Fundamentals of Database Systems" Pearson Education

WEB LINKS:
1. http://nptel.iitm.ac.in.
2. www.mcgrawhill.ca / higher education/products/0073523321ebookee.org/. ../Data-base-Management- Systems-Raghurama-Krishna

(13CS314) SOFTWARE ENGINEERING

Program: B.Tech   Lecture   : 4/Week
Year: III   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the software life cycle system and the different software architectural views.
2. To understand the software requirement engineering and SRS document.
3. A general understanding of software process models.
4. To aware of Software Engineering methods and practices, and their appropriate application.
5. To understand the V and V techniques, design of software product.
6. To learn about the risk management, maintanence of the software product.

COURSE OUTCOMES:
The student will be able to
1. Apply the functional and non-functional requirements to model an effective software product.
2. Analyze, design and implement an object oriented approach system.
3. Enhance the testing tools for effective debugging.
4. Analyze the metrics, risk and the quality issues for designing a process/product.

UNIT - I
Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, Software myths.

A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Process models: The waterfall model, Incremental process models, Evolutionary process models, The Unified process.

UNIT - II
Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

System models: Context Models, Behavioral models, Data models, Object models, structured methods.

UNIT - III
Design Engineering: Design process and Design quality, Design concepts, the design model.

Creating an architectural design: Software architecture, Data design, Architectural styles and patterns, Architectural Design.

Object-Oriented Design: Objects and object classes, An Object-Oriented design process, Design evolution.

Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT - IV
Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

Product metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

Metrics for Process and Products: Software Measurement, Metrics for software quality.

UNIT –V
Risk Management: Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

Quality Management : Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

TEXT BOOKS:
1. Roger S. Pressman, Software Engineering "A practitioner's Approach" 6th Edition. McGrawHill International Edition,ISBN:0073375977
2. Sommerville "Software Engineering" 7th Edition, Pearson education,ISBN:-13:978-0321210265

REFERENCE BOOKS:
1. James F. Peters, Witold Pedrycz "Software Engineering, an Engineering approach" John Wiely,ISBN:10:0471189642
2. Waman S Jawadekar "Software Engineering principles and practice" The McGraw-Hill Companies,ISBN:9780070583719

WEB LINKS:
1. http://nptel.iitm.ac.in
2. www.amazon.com Computer Science Software Engineering
3. www.pearsoned.co.in Engineering and Computer Science

(13CS315) DATA COMMUNICATIONS AND COMPUTER NETWORKS

Program: B.Tech	Lecture : 4/Week
Year: III	Tutorial : 1/Week
Sem: I	Practical : -
Int. Max Marks: 30	Credits : 4
Ext. Max Marks: 70	

COURSE OBJECTIVES:
1. To understand layered network architecture and standard organizations for data communications.
2. To understand the Functions of all layers in various networking models.
3. To understand various transmission media.
4. To understand the concepts of Error control and Flow control Techniques.
5. To learn the concepts of Logical addressing, process-to-process delivery.
6. To understand the network security for the designed network model

COURSE OUTCOMES:
The students will be able to
1. Apply the network software and hardware to design effective network systems.
2. Accomplish the structures of different Networks.
3. Apply the different techniques for effective data transmission.
4. Apply attack preventing mechanisms in design to enhance security.

UNIT - I
Introduction: Data Communications, Networks, The Internet, Protocols and Standards, Network Models, Layered Tasks, The OSI Model, Layers in the OSI Model, TCP/IP Protocol Suite, Addressing, Physical Layer and Media, Data and Signals, Analog and Digital, Periodic Analog Signals, Digitals Signals, Transmission impairment, Data Rate Limits, Performance, Digital Transmission, Digitals-to-Digital Conversion, Analog-to-Digital Conversion, Analog Transmission, Digital-to-Analog Conversion, Analog-to-analog Conversion.

UNIT - II
Bandwidth Utilization: Mulitplexing and Spreading, Multiplexing, Spread Spectrum, Transmission Media, Guided Media, Unguided Media: Wireless, Switching, Circuit-Switched Networks, Datagram Networks, Virtual-Circuit Networks, Structure of a Switch, Using Telephone and Cable Networks for Data Transmission, Telephone Networks, Dial-up Modems, Digital Subscriber Line, Cable TV Networks, Cable TV for Data Transfer.

UNIT– III
Data Link Layer: Design issues, framing, error detection and correction, CRC, Elementary Protocol-stop and wait, Sliding Window, Slip, Data link layer in HDLC, Internet, ATM.

Medium Access sub layer: ALOHA, MAC addresses, Carrier sense multiple access. IEEE 802.X Standard Ethernet, wireless LANS. Bridges

UNIT– IV
Network Layer: Virtual circuit and Datagram subnets-Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broad cast, Multi cast, distance vector routing. Dynamic routing – Broadcast routing. Rotary for mobility. Congestion, Control Algorithms – General Principles – of Congestion prevension policies. Internet working: The Network layer in the internet and in the ATM Networks.

UNIT– V
Transport Layer: Transport Services, Connection management, TCP and UDP protocols; ATM AAL Layer Protocol.

Application Layer – Network Security, Domain name system, SNMP, Electronic Mail; the World WEB, Multi Media.

TEXT BOOKS:
1. Behrouz A. Forouzan, "Data Communications and Networking",3rd Edition TMH,ISBN:-10:0072923547
2. Andrew S Tanenbaum, "Computer Networks", 4th Edition. Pearson Education/PHI, ISBN:-10:0130661023

REFERENCE BOOKS:
1. S. Keshav "An Engineering Approach to Computer Networks",2nd Edition, Pearson Education,ISBN:-10:0-13-607967-9
2. W.A. Shay "Understanding communications and Networks", 3rd Edition, Thomson.

WEB LINKS:
1. http://nptel.iitm.ac.in
2. http://www.tatamcgrawhill.com/html/9780070499355.html
3. ebookee.org/.../Computer-Networks-Andrew-S-Tanenbaum-4th-Edition

(13CS320) DATABASE MANAGEMENT SYSTEMS LABORATORY

Program: B.Tech   Lecture : -
Year: III   Tutorial : -
Sem: I   Practical : 3/Week
Int. Max Marks: 25   Credits   : 2
Ext. Max Marks: 50

COURSE OBJECTIVES:
1. To understand the Preliminary Concepts of Database Systems.
2. To understand the ER model of Database.
3. To understand about the SQL, triggers and procedures to work with Databases.
4. To learn about the create, drop, integrity constraints for the table and views.
5. To aware of developing the procedures, cursors and triggers.
6. To learn about the complete design of an effective database system.

COURSE OUTCOMES:
The students will be able to
1. Apply the E R model to design an effective db systems.
2. Accomplish the structures of different SQLs.
3. Apply the different techniques for effective data base management system
4. Design the real world database applications

Recommended Systems/Software Requirements:

1. Intel based desktop PC
2. Mysql /Oracle latest version Recommended
   1. Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
   2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.
      Example**:** Select the roll number and name of the student who secured fourth rank in the class.
   3. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
   4. Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)
   5. i) Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)
      ii) Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.

6. Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.
7. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE-APPLICATION ERROR.
8. Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
9. Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.
10. Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
11. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
12. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

Roadway Travels Database
The student is expected to practice the designing, developing and querying a database in the context of example database "Roadway travel". Students are expected to use "Mysql" database.

"Roadway Travels" is in business since 1997 with several buses connecting different places in India. Its main office is located in Hyderabad. The company wants to computerize its operations in the following areas:
 • Reservations
 • Ticketing
 • Cancellations

RESERVATIONS:
Reservations are directly handled by booking office. Reservations can be made 60 days in advance in either cash or credit. In case the ticket is not available, a wait listed ticket is issued to the customer. This ticket is confirmed against the cancellation.

CANCELLATION AND MODIFICATIONS:
Cancellations are also directly handed at the booking office. Cancellation charges will be charged.

Wait listed tickets that do not get confirmed are fully refunded.

Task 1: E-R Model
Analyze the problem carefully and come up with the entities in it. Identify what data has to be persisted in the database. This contains the entities, attributes etc.
Identify the primary keys for all the entities. Identify the other keys like candidate keys, partial keys, if any.

Example: **Entities:**
> 1. BUS
> 2. Ticket
> 3. Passenger

PRIMARY KEY ATTRIBUTES:

1. Ticket ID (Ticket Entity)
2. Passport ID (Passenger Entity)

Apart from the above mentioned entities you can identify more. The above mentioned are few.

Task 2: Concept Design with E-R Model
Relate the entities appropriately. Apply cardinalities for each relationship. Identify strong entities and weak entities (if any). Indicate the type of relationships (total / partial). Try to incorporate generalization, aggregation, specialization etc wherever required.

Example: E-r diagram for bus
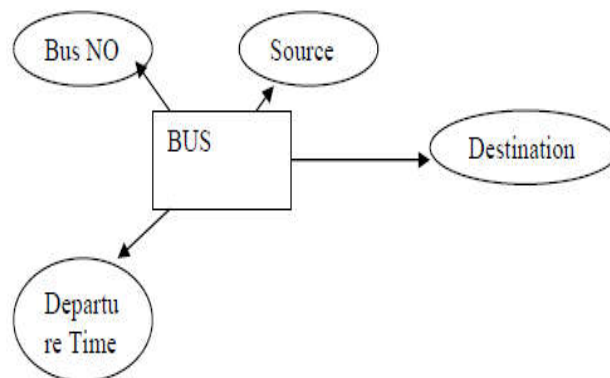
Task 3: Relational Model
Represent all the entities (Strong, Weak) in tabular fashion.Represent relationships in a tabular fashion. There are different ways of representing relationships as tables based on the cardinality. Represent attributes as columns in tables or as tables based on the requirement. Different types of attributes (Composite, Multivalued, and Derived) have different way of representation.
Example: The passenger tables look as below. This is an example. You can add more attributes based on your E-R model.

Task 4: Normalization

Database normalization is a technique for designing relational database tables to minimize duplication of information and, in so doing, to safeguard the database against certain types of logical or structural problems, namely data anomalies. For example, when multiple instances of a given piece of information occur in a table, the possibility exists that these instances will not be kept consistent when the data within the table is updated, leading to a loss of data integrity. A table that is sufficiently normalized is less vulnerable to problems of this kind, because its structure reflects the basic assumptions for when multiple instances of the same information should be represented by a single instance only.

Task 5: practicing DDL, DML commands

In this task you will learn Creating databases, How to create tables, altering the database, dropping tables and databases If not required. You will also try truncate, rename commands etc.

Example for creation of a table.
CREATE TABLE Passenger (
Passport id INTEGER PRIMARY KEY,
Name CHAR (50) NULL,
Age Integer,
Sex Char
);

Note: Detailed creation of tables is given at the end.
 Practicing DML commands
DML commands are used to for managing data within schema objects. Some examples:
   • SELECT - retrieve data from the a database
   • INSERT - insert data into a table
   • UPDATE - updates existing data within a table
   • DELETE - deletes all records from a table, the space for the records remain

Few more Examples of DML commands:
Select * from Bus; (selects all the attributes and display)
UPDATE BUS SET Bus No = 1 WHERE BUS NO=2;

Task 6: Querying

In this week you are going to practice queries (along with sub queries) using ANY, ALL, IN, Exists, NOT EXISTS, UNION, INTERSECT, Constraints etc.

Practice the following Queries:
1. Display unique PNR_no of all passengers.
2. Display all the names of male passengers.
2. Display the ticket numbers and names of all the passengers.
3. Display the source and destination having journey time more than 10 hours.
4. Find the ticket numbers of the passengers whose name start with 'A' and ends with 'H'.
5. Find the names of passengers whose age is between 30 and 45.
6. Display all the passengers names beginning with 'A'
7. Display the sorted list of passengers names
8. Display the Bus numbers that travel on Sunday and Wednesday

9. Display the details of passengers who are traveling either in AC or NON_AC(Using only IN operator)

Task 7: Querying (continued…)
You are going to practice queries using Aggregate functions (COUNT, SUM, AVG, and MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
• Write a Query to display the Information present in the Passenger and cancellation tables.

Hint: Use UNION Operator.
• Write a Query to display different travelling options available in British Airways.
• Display the number of days in a week on which the 9W01 bus is available.
• Find number of tickets booked for each PNR_no using GROUP BY CLAUSE. **Hint:** Use GROUP BY on PNR_No.
• Find the distinct PNR numbers that are present.
• Find the number of tickets booked in each class where the number of seats is greater than 1.

Hint: Use GROUP BY, WHERE and HAVING CLAUSES.
• Find the total number of cancelled seats.
• Write a Query to count the number of tickets for the buses, which travelled after the date '14/3/2009'. **Hint:** Use HAVING CLAUSES.

Tables
BUS
Bus No: Varchar: Pk
Source :Varchar
Destination :Varchar

Passenger
PNR_No : Numeric(9) : PK
Ticket_No: Numeric (9)
Name: Varchar(15)
Age :int (4)
Sex:Char(10) : Male / Female
PPNO: Varchar(15)

Reservation
PNR_No: Numeric(9) : FK
Journey_date :datetime(8)
No_of_seats :int (8)
Address :Varchar (50)
Contact_No: Numeric (9) -->Should not be less than 9 and Should not accept any other character other than Integer
Status: Char (2) : Yes / No

Cancellation
PNR_No: Numeric(9) : FK
Journey_date :datetime(8)
No_of_seats :int (8)
Address :Varchar (50)

Contact_No: Numeric (9) -->Should not be less than 9 and Should not accept any other character other than Integer
Status: Char (2) : Yes / No

Ticket
Ticket_No: Numeric (9): PK
Journey_date :datetime(8)
Age :int (4)
Sex:Char(10) : Male / Female
Source :Varchar
Destination :Varchar
Dep_time :Varchar

REFERENCE BOOKS:
1. RickF.VanderLans "Introduction to SQL" Pearson education,ISBN:10:0321305965
2. B.Rosenzweig and E.Silvestrova "Oracle PL/SQL" Pearson education, ISBN:9788131728970

WEB LINKS:
1. http://nptel.iitm.ac.in
2. www.mcgrawhill.ca/highereducation/products/0073523321
3. ebookee.org/.../Data-base-Management-Systems-Raghurama-Krishna

(13EC326) MICROPROCESSORS LABORATORY

Program: B.Tech	Lecture : -
Year: III	Tutorial : -
Sem: I	Practical : 3/Week
Int. Max Marks: 25	Credits : 2
Ext. Max Marks: 50	

COURSE OBJECTIVES:
1. To learn the Assemble language programming using MASM (Micro Assembler).
2. To learn 8086 ALP and conduct experiments on data processing.
3. To learn various interfacing devices with 8086.
4. To learn assembly language programming using 8051 microcontroller.
5. To conduct experiments on timers, serial/parallel ports, interrupts using 8051.
6. To develop ability in programming using microprocessors and microcontrollers.

COURSE OUTCOMES:
The students will be able to
1. Learn MASM assembler programming .
2. Learn an ALP in 8086 and its interfacing circuits.
3. Write an ALP in 8051 for parallel ports and timers.
4. Develop ability in designing a microprocessor and microcontroller systems.

I. MICROPROCESSOR 8086:
1. Introduction to MASM/TASM.
2. Arithmetic operation – Multi byte Addition and Subtraction, Multiplication and Division – Signed and unsigned Arithmetic operation, ASCII – arithmetic operation.
3. Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion.
4. By using string operation and Instruction prefix: Move Block, Reverse string, Sorting, Inserting, Deleting, Length of the string, String comparison.
5. DOS/BIOS programming: Reading keyboard (Buffered with and without echo) – Display characters, Strings.

II. INTERFACING:
1. 8259 – Interrupt Controller: Generate an interrupt using 8259 timer.
2. 8279 – Keyboard Display: Write a small program to display a string of characters.
3. 8255 – PPI: Write ALP to generate sinusoidal wave using PPI.
4. 8251 – USART: Write a program in ALP to establish Communication between two processors.

III. MICROCONTROLLER 8051
1. Reading and writing on a parallel port
2. Timer in different modes
3. Serial communication implementation

(13HS317) PROFESSIONAL ETHICS AND VALUES

Program: B.Tech   Lecture : 2/Week
Year: III   Tutorial : -
Sem: II   Practical : -
Int. Max Marks: 30   Credits : 2
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To bring awareness among engineering graduates on ethics and human values.
2. To understand the ethical theories and their application to work ethics.
3. To understand the risk and safety measurements to be taken in various engineering areas.
4. To know various codes of ethics used by professional bodies.
5. To understand the concepts of safety measures.
6. To learn about professional responsibility as an engineer.

COURSE OUTCOMES:
The student will be able to:
1. Develop awareness on ethics and human values
2. Become morally and socially responsible.
3. Find engineering solutions from the ethical platform
4. Motivate others on moral values.

UNIT – I
Scope for Ethics in Engineering: Human Values, Morals and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue – Honesty – Courage – Valuing Time – Co-operation and Commitment – Empathy – Self-Confidence –Engineers as responsible experimenters - The code of ethics for engineers - NSPE guidelines.

UNIT – II
Ethical Theories - Philosophical point of view- Western Theories: Utilitarian, Deontology and Virtue theory, Moral dilemmas: Kohlberg's and Gilligan's theories, Indian system of moral values: customs and religion- consensus and controversy - Engineers, Managers and Heads and their role in Ethics.

UNIT – III
Safety: Responsibility as an engineer - Safety and Risk – Risk / Benefit analysis and reducing risk – Road and Rail safety- Fire safety – Electrical and Industrial Safety.

UNIT – IV
Engineering ethics and global issues - Confidentiality - Conflicts of interest - Professional rights – Plagiarism - Intellectual Property Rights (IPR) – discrimination - Environmental ethics – Computer ethics – Ethics related to weapon development - sample code of Ethics like ASME, IEEE and Institution of Engineers (India).

UNIT – V
Engineering Ethics - Case Studies: Discuss each case in groups through oral presentation.

Case 1: DC-10 Jumbo Jet Crash
Case 2: Whistle Blowing
Case 3: Citicorp Building
Case 4: Ford Pinto safety problems
Case 5: Bhopal Gas Tragedy
Case 6: Chernobyl
Case 7: Columbia disaster

TEXT BOOKS:
1. Charles Fleddermann, "Engineering Ethics", Prentice Hall, 2nd Edition, 2003.
2. Naagarazan, R.S., "Professional Ethics and Human Values", New Age, 2006.

REFERENCE BOOKS:
1. Mike W. Martin and Ronald Schinzinger, "Introduction to Engineering Ethics", McGraw-Hill, 1999.
2. Alastair S. Gunn, P. Aarne Vesilind, "Engineering Ethics and the Environment", Cambridge University Press, 1998.
3. Charles E. Harris, Jr., Michael S. Pritchard, and Michael J. Rabins, "Engineering Ethics: Concepts and Cases", Wardsworth Inc., 2005.

(13CS316) OBJECT ORIENTED ANALYSIS AND DESIGN

Program: B.Tech   Lecture   : 4/Week
Year: III   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the basic terminology and OO concepts.
2. To understand the iterative and incremental models of a software lifecycle.
3. To learn about the UML modeling language.
4. To learn about the structural and behavioural diagrams.
5. To understand the design of an effective OO database.
6. To aware of a case study for OO database through UML.

COURSE OUTCOMES:
The students will be able to
1. Have an exposure to the model, architecture, design of a software development lifecycle.
2. Apply class, object and behavioral modeling to design OO system.
2. Accomplish the architectural view of a modelling.
3. Apply, analyze, model and design an effective Object Oriented system.

UNIT – I
Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, and Software Development Life Cycle.

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.

UNIT – II
Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

Class and Object Diagrams: Terms, concepts, modeling techniques for Class and Object Diagrams.

UNIT – III
Basic Behavioral Modeling-I: Interactions, Interaction diagrams. **Basic Behavioral Modeling-II:** Use cases, Use case Diagrams, Activity Diagrams.

UNIT – IV
Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams

UNIT – V
Object Oriented Database design, Modern Object technologies and web services.

Case Study: The Unified Library application.

TEXT BOOKS:
1. Grady Booch, James Rumbaugh, Ivar Jacobson "The Unified Modeling Language User Guide" Pearson Education,ISBN:-10:0321267974
2. Meilir Page-Jones "Fundamentals of Object Oriented Design in UML" Pearson Education,ISBN:-10:020169946

REFERENCE BOOKS:
1. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado "UML 2 Toolkit" WILEY-Dreamtech India Pvt. Ltd,ISBN:0-471-29551-3
2. Atul Kahate "Object Oriented Analysis and Design" The McGraw-Hill Companies,ISBN:0070583765

WEB LINKS:
1. http://nptel.iitm.ac.in
2. www.pearsonhighered.com › ... › Unified Modeling Language (UML)

(13CS317) WEB TECHNOLOGIES

Program: B.Tech   Lecture   : 4/Week
Year: III   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the tools and web technologies necessary for business application design and development.
2. To understand the HTML, Java Script, Servlets, JSPs and XML.
3. To learn about the web pages using various technologies.
4. To learn about various web servers.
5. To learn about various JDBC Drivers and Validation Techniques.
6. To understand about the Java packages and utilities.

COURSE OUTCOMES:
The students will be able to
1. Apply markup languages to design effective web pages.
2. Have an exposure to different webservers.
3. Design the DB applications using JDBC, JSP and Servlets.
4. Have an exposure to use the utilities and the packages.

UNIT - I
HTML Common Tags: List, Tables, images, forms, Frames; Cascading Style sheets; Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script.

UNIT - II
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.

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

UNIT - IV
Introduction to JSP: The Problem with Servelet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment: Installing the Java Software Development Kit, Tomcat Server and Testing Tomcat.

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.

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

TEXT BOOKS:
1. Chris Bates "Web Programming, building internet applications" 2nd Edition, WILEY Dreamtech ,ISBN:9780470017753,0470017759
2. Sebesta "Programming world wide web"- Pearson,ISBN:10:0132665816

REFERENCE BOOKS:
1. Marty Hall and Larry Brown, "Core   SERVLETS AND JAVA SERVER PAGES", Vol.1: CORE   TECHNOLOGIES, Pearson,ISBN:10:0131482602
2. Patrick Naughton and Herbert   Schildt, "The complete Reference Java 2", Fifth Edition TMH,ISBN:10:0070435928

WEB LINKS:
1. http://nptel.iitm.ac.in
2. http://ebookee.org/dl/Web-Programming-building-internet-applications-Chris-Bates- 2nd-Edition-WILEY-Dreamtech-UNIT -s-1-2-3
3. http://ebookee.org/Java-Server-Pages-Hans-Bergsten-SPD-O-Reilly-UNITs-5-6-7-8-pdf-repost-mediafire-link_1227500.html.

(13CS318) LANGUAGE PROCESSORS

Program: B.Tech   Lecture   : 4/Week
Year: III   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the different phases of compilation.
2. To know about the different parsing techniques of compiler.
3. To identify the different types of runtime environment of the compiler.
4. To acquire the skills to Design and program various kinds of compilers.
5. To understand different types of code optimization techniques.
6. To learn about the error recovery management process in compiler.

COURSE OUTCOMES:
The students will be able to
1. Apply the knowledge of different phases of a compiler to design to an effective compiler.
2. Apply the syntax and semantic rules to design an error free compiler.
3. Enhance the issues on source languages and storage allocation strategies for dynamic storage system.
4. Enhance the code Generation and optimization technology.

UNIT - I
Introduction to Compiling : Compilers, Analysis of the source program, The phases of a compiler, Cousins of the compiler, Concepts of Loaders, Linkers, The grouping of phases, Compiler writing tools.

Lexical Analysis: The role of the lexical analyzer, Input buffering, Specification of tokens, Recognition of tokens, A Language for specifying lexical Analyzers, Finite automata, Design of a lexical analyzer, Optimization of DFA-based pattern matchers .

UNIT - II
Syntax Analysis: The role of a parser, Context-free grammars, Writing a grammar, Top-down parsing, Bottom-up parsing, Operator Precedence, Role of a parser – classification of parsing techniques – Top down parsing – First and Follow- LL(1) Grammars, Non-Recursive predictive parsing – Error recovery in predictive parsing. Introduction to simple LR – Why LR Parsers – Model of an LR Parsers – Operator Precedence- Shift Reduce Parsing – Difference between LR and LL Parsers, Construction of SLR Tables. More powerful LR parses, construction of CLR (1), LALR Parsing tables, Dangling ELSE Ambiguity, Error recovery in LR Parsing.

UNIT - III
Syntax Directed Translation: Syntax-directed definitions, Construction of syntax trees, Bottom-up evaluation of S-attributed definitions, L-attributed definitions, Top-Down translation, Bottom-up evaluation of inherited attributes, Space for attribute values at compile time, Analysis of syntax-directed definitions.

Type Checking: Type systems, Specification of a simple type checker, Equivalence of type expressions, Type Conversions.

UNIT - IV
Runtime Environments: Source language issues, Storage organization, Storage-allocation strategies, Symbol tables, Language facilities for dynamic storage allocation, Dynamic storage allocation techniques.

Intermediate Code Generation: Intermediate languages, Declarations, Assignment statements, Boolean Expressions, Back patching.

UNIT - V
Code Generation : Issues in the design of a code generator, The target machine, Runtime storage management, Basic blocks and flow graphs, Next-use information, A simple code generator, Register allocation and assignment, The dag representation of basic blocks, Peephole optimization, Generating code from dags, Code-generation algorithm.

Code Optimization: Introduction, The principal sources of optimization, Optimization of basic blocks, Loops in flow graphs, Introduction to global data-flow analysis, Code-improving transformations.

TEXT BOOKS:
1. Alfred V.Aho, Ravi Sethi and Jeffry D. Ullman "Compiler Principles, Techniques and Tools"16th Indian Reprint, Pearson Education Asia, ISBN No.81-7808-046-X.,2004.
2. D.M.Dhamdere "Compiler Construction", 2nd Edition " Mac Mellon India Ltd", ISBN No.0333 -90406-0,1997

REFERENCE BOOKS:
1. Donovan,"Systems programming", Mc. Graw Hill.
2. Leland L. Beck, "System Software – An Introduction to Systems Programming" Addison Wesley.

WEB LINKS:
1. books.google.co.in Computers Programming General
2. ww.amazon.com Books Computers and Technology
3. http://nptel.iitm.ac.in

(13CS319) COMPUTER GRAPHICS AND MULTIMEDIA

Program: B.Tech   Lecture : 4/Week
Year: III   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the fundamentals of Computer Graphics and Two Dimensional Transformations
2. To understand the segmentation, windowing, Clipping and Three Dimensional Graphics.
3. To learn about the projections and different Animation techniques of Graphical system.
4. To understand the different Multimedia applications.
5. To learn about the line removal algorithms and surface management.
6. To learn about the media preparation, composition, communication , consumption and entertainment.

COURSE OUTCOMES:
The students will be able to
1. Apply the transformation principles, segmentation algorithm and windowing and clipping to design the effective graphical system.
2. Apply the 3D graphics, projections to evaluate the graphical system.
3. Apply animation methods and surfaceand line removal procedures for effective display of an image.
4. Apply the sound, data streams and MIDI s/w's to analyze the speech system for effective multimedia application.

UNIT - I
Introduction to Computer Graphics: Application of Computer Graphics, Pixel, Frame buffer, Graphics standards, Image representation, DDA and Bresenham line   generation algorithms, Graphics primitive operations, Character generation methods, Aliasing and Anti-aliasing.

Polygons: Polygon representation, inside test methods, Seed filling and Scanline filling algorithms.

Two Dimensional Transformations: Scaling, Translation and Rotation transformations, Rotation about arbitrary point, Homogenous coordinates, Inverse transformations, Transformation routines, Reflection and Shearing transformations, Instance transformations.

UNIT - II
Segments: Segment creation algorithm, Segment closing algorithm, Segment deletion and Segment renaming algorithms, Image transformation.

Windowing And Clipping: Window and View port, Viewing transformation matrix, Implementation of viewing transformation, Multiple windowing, Cohen-Sutherland Outcode

clipping algorithm , Sutherland Hodgman clipping algorithm, Midpoint subdivision clipping algorithm, Generalized clipping

UNIT - III
Three Dimensional Graphics: 3D Primitives, 3D Transformations, Rotation about arbitary axis, 3D Viewing, Viewing parameters.

Projections: Parallel projection, Perspective projection, Derivation of parallel projection matrix, Derivation of perspective projection matrix.

UNIT - IV
Hidden Surface And Lines Removal Algorithms: Z-Buffer algorithm, Painters algorithm, Wornock algorithm, Franklin algorithm and Backface removal algorithm. **Animation:** Types of animations, Animation languages, Methods of controlling animation.

UNIT - V
Multimedia: Media and Data streams**,** Main properties of Multimedia systems, Traditional data stream characteristics, Asynchronous transfer mode, Synchronous transfer mode.

Sound/Audio: Basic sound concepts, Computer representation of sound, Audio formats, Music, MIDI concepts, MIDI devices, MIDI messages, MIDI software, Music and Speech, Speech generation, Speech analysis, Speech transmission.

Applications: Media preparation, Media composition, Media integration, Media communication, Media consumption, Media entertainment.

TEXT BOOKS:
1. Steven Harrington, "Computer Graphics" 2nd Edition, McGraw-Hill, ISBN No: 0-07-1005472, 1987.
2. Ralf Steinmetz and Klara Nahrstedt, "Multimedia: Computing, Communicatons And Applications", Addison Wesley, First Indian reprint, ISBN No:81-7808-319-1,2001.

REFERENCE BOOKS:
1. Donad Hearn and Pauline Baker, "Computer Graphics", 2nd Edition, Pearson Education Asia, ISBN No:81-7808-794-4.
2. James D.Foley Andries Van Dam Steven K. Fernier, John Hugs, "Computer Graphics Principl and Practice, 2nd Edition, Pearson Education Asia, ISBN No: 81-7808-038-9, 2002.

WEB LINKS:
1. http://nptel.iitm.ac.in
2. www.wits.ac.in/pdf
3. www.ijcaonline.org/archives/volume39/number15/4897-7429

(13OE301) ENTREPRENEURSHIP FOR ENGINEERS
(Open Elective)

Program: B.Tech   Lecture   : 3/Week
Year: III   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the concepts of Entrepreneur, Entrepreneurship, and Business Environment.
2. To practice Idea Generation and Developing Business Plan
3. To understand how to initiate a Business Proposal, Manage and Finance a New venture.
4. To educate on basic areas of Business firms like Production, Marketing and Labour laws
5. To understand the Role of Small scale Industries and concepts / process of Company registration
6. To give a conceptual and practical understanding on How to start a business

COURSE OUTCOMES:
The students will be able to
1. Explore Business ideas by thorough scanning of Business Environment and start a Venture
2. Procedurally register the company and by frame rules, regulations and Bylaws
3. Initiate a Project and assess the feasibility and viability of Project, including financial elements
4. Lead Business entity with through knowledge on Business legislation and associated affairs

UNIT – I
Introduction to Entrepreneurship: Definition of Entrepreneur - Entrepreneurial Traits - Environment Scanning, Identification of Entrepreneurial Opportunities, Creating and Starting the venture: Sources and methods of generating ideas, Selection of an Enterprise, Business Plan Writing –**Model Templates and Idea Generation Games**

UNIT – II
Enterprise Planning, Resourcing and Institutional Support: Project Management Process – Preparation of a Project Report - Initiation – Appraisal – Scheduling - Financial Analysis - Fixed and Working Capital Requirement, Funds Flows, Profit Ratios, Break Even Analysis etc. - Cost and Control – Procurement - Implementation and control – **Finance Template work-ups and Cases**

UNIT –III
SSI Role and Enterprise Management – Overview:
1. Role of SSI in Indian Economy – Procedures and Policies for SSI setup
2. Supporting Institutions for Entrepreneurship –SIDBI – NSIC – DICs – APSFC
3. General Management: Basic Management Functions - Planning, Organizing, Staffing, Leading and Controlling

4. Managing Market: Function of Marketing , Marketing Mix, Market Segmentation, Product, Price, Place and Promotion, Online Marketing
5. Mini Project / Case on Marketing / Retailing / Online marketing

UNIT – IV
Companies Act, 1956: Steps and procedure for incorporation of the company, Company Management – Appointment of Directors, Powers, duties, and liabilities of Directors, Company Meetings, Resolutions, Winding-up of a Company – **Practical exposure to Registration process and formalities**

UNIT – V
Business Legislation: Provisions of Health, Safety and Welfare under Indian Factories Act, Industrial Disputes Act, Employees State Insurance Act, Workmen's Compensation Act and Payment of Bonus Act, Consumer Protection Act – **Discussion with Practitioners (Employee / Employer / Union members / Govt. Authorities etc)**

TEXT BOOKS:
1. Robert Hisrich et al, "Entrepreneurship", 6th e, TMH, New Delhi, 2012, ISBN: 978-00-780-2919-6
2. Nandan H, "Fundamentals of Entrepreneurship", PHI, New Delhi, 2013, ISBN: 978-81-203-4750-2

REFERENCE BOOKS:
1. Vasant Desai "Small Scale industries and entrepreneurship" Himalaya publishing House, New Delhi 2013. ISBN: 978-93-5097-376-9
2. Raj Shankar, "Entrepreneurship Theory and Practice", TMH First edition, 2012, ISBN: 978-81-8209-269-3

(13OE302) ENGINEERING OPTIMIZATION
(Open Elective)

Program: B.Tech   Lecture: 3/ Week
Year: III   Tutorial: 1/ Week
Sem: II   Practical:
Int. Max Marks: 30   Credits: 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the concepts of one dimensional optimization methods and multi variable non-linear unconstrained optimization.
2. To learn about the concepts of geometrical programming.
3. To learn about the concepts of dynamic programming.
4. To understand and differentiate the linear, integer and stochastic programming concepts
5. To understand about different search concepts.
6. To learn about stochastic programming.

COURSE OUTCOMES:
The students will be able to
1. Solve different methods of optimization.
2. Analyze geometric and dynamic programming.
3. Solve linear, integer programming concepts.
4. Analyze the search concepts.

UNIT – I
Single Variable Non-Linear Unconstrained Optimization
One dimensional Optimization methods:- Uni-modal function, elimination methods, Fibonacci method, golden section method, interpolation methods – quadratic and cubic interpolation methods.

Multi variable non-linear unconstrained optimization: Direct search method – Univariant method - pattern search methods –Hook -Jeeves, Rosenbrock search methods- gradient methods, gradient of function, steepest decent method, Fletcher Reeves method.

UNIT – II
Geometric Programming: Polynomials – arithmetic - geometric inequality – unconstrained G.P- constrained G.P ($\leq$ type)

UNIT – III
Dynamic Programming: Terminology-Multistage decision process, principles of optimality, application of dynamic programming, production: Short path problem- Inventory- Allocation

UNIT – IV
Linear Programming: Formulation – Sensivity analysis. Change in the constraints, cost coefficients, coefficients of the constraints, addition and deletion of variable, constraints.
Simulation – Introduction – Types- steps – application – inventory – queuing.

UNIT – V

Integer Programming: Introduction – formulation – Gomory cutting plane algorithm – branch and bound method.

Stochastic Programming: Basic concepts of probability theory, random variables-distributions-mean, variance, correlation, co variance, joint probability distribution-stochastic linear Programming.

TEXT BOOKS:
1. S.S.Rao, "Optimization theory and Applications", New Age International.
2. J.K Sharma, "Optimization for engineering design".
3. M.C.Joshi, K.M.Moudgalya, "Optimization Techniques theory and practice", Narosa Publications.

REFERENCE BOOKS:
1. Mac Millan, "Operations Research".
2. Benugundu, Chandraputla "Optimization Techniques", Pearson Asia
3. R.LRardin, "Optimization in operations research".
4. Law, Kelton TM, "Simulation Modelling and Analysis".

(13OE303) ENGINEERING PROJECTS IN COMMUNITY SERVICE
(Open Elective)

Program: B.Tech   Lecture : 3/Week
Year: III   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To apply domain knowledge to the design of community- based projects
2. To develop an understanding of design as a start-to-finish process
3. An ability to identify and acquire new knowledge as a part of the problem- solving/design process.
4. To function on multidisciplinary teams and an appreciation for the contributions from individuals from multiple disciplines
5. To get awareness of professional ethics and responsibility
6. To get appreciation of the role that their discipline can play in social contexts

COURSE OUTCOMES:
The student will be able to
1. Learn how to apply disciplinary knowledge to real and possibly ill-defined problems.
2. Learn to collaborate with people from other disciplines and develop an appreciation for cross-disciplinary contributions in design.
3. Develop the broad set of skills needed to be successful in the changing global workplace and world:
4. Provide significant service to the community while learning; gain an understanding of the role that engineering (and their discipline) can play in society.

UNIT - I
Introduction to Epics: Definition of EPICS, Service learning, values of EPICS, the expectations for EPICS students, Human Centered design.

Project Management: Managing People and Time
Role of the project manager, project versus product management, tools to use to manage project tasks, ways to identify risks to a project plan

UNIT – II
Introduction to Design- I: Different kinds of design thinking and its challenges, overall understanding of design processes, Describe differences between design and project management.

Understanding Stakeholders and Understanding Social Context: Identify stakeholders in a design, Compare basic listening with contextual listening, Identify ways of involving stakeholders in your project's design.

UNIT – III
Introduction to Design II : Identify tasks and strategies that are effective for the initial phases of the design process, Identify how these tasks and strategies can be/were used in your project

Practical Strategies for Human-Centered Design: Design space exploration, challenges with concept generation, Design fixation, Design heuristics, Cognitive heuristics, apply existing mechanisms in a new way.

UNIT – IV
Introduction to Design III: Identify tasks and strategies that are effective for the conceptual, detailed, and delivery phases of the design process; identify how these tasks and strategies can be/were used in your project

UNIT – V
Design Review: Delivering Effective Design Review Presentations**,** Testing**,** Making Projects User-Ready**,** Feedback /Looking Forward

REFERENCES:
1. Dahir, M. (1993), "Educating engineers for the real world", in Technology Review, Aug./Sept. 1993, pp. 14-16.
2. Govindarajan M, Natarajan S, Senthil Kumar V.S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

WEB RESOURCES:
1.   https://engineering.purdue.edu/EPICS/Resources/Lectures

(13OE304) COGNITIVE ENGINEERING
(Open Elective)

Program: B.Tech   Lecture   : 3/Week
Year: III   Tutorial : 1/Week
Sem : II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES
1. To identify different cognitive styles, cognitive traits, learning styles andtheir contribution to the make-up of individuals.
2. To critically assess the impact of individual differences on learning and use habits.
3. To design products, which take the different users into consideration.
4. To evaluate and apply a variety of user-centered design principles, like participatory design and standardization of interfaces, to design projects
5. To apply different cognitive engineering analysis techniques, like task analysis, user observations, verbal protocol analysis, interviews, focus groups and needs assessment in order to learn more about how people think and learn
6. To apply and translate a systematic design process and the knowledge of individual differences in the design of user-centered everyday life products and/or learning environments

COURSE OUTCOMES
The students will be able to
1. Learn and experience the differences in individuals learning styles
2. Develop user-centered principles in the design of interfaces, every-day products and learning environments, whether in industrial or academic settings.
3. Apply translation of the acquired knowledge on individual differences into life-long learning.
4. Develop an ability to conduct the critical evaluation of the design principles while designing new products

UNIT – I
Introduction to cognitive engineering, Cognitive individual differences – Overview, How do people learn? – Overview

UNIT – II
Different models of intelligence, Systematic Process of User- centered design – Introduction/ basic principles, Learning Strategies for cognitive differences, Life-long learning strategies, Analysis – Needs Assessment (observations, interviews and questionnaires), User analysis

UNIT – III
Design for different users in mind – different models, Participatory Design models, Strategies of Participatory design, Analysis – Task Analysis

UNIT – IV

User-centered design principles and design guidelines Personality Traits, Cognitive traits, styles, Limitations of user-centered design

UNIT – V

Finding out if a product/process fulfills the user's need – Usability testing, Strategies for usability testing I – observations, think-alouds and eye-tracking, Strategies for usability testing II—interviews, focus groups and surveys, Case studies

TEXT BOOKS:
1. Norman, Donald A. (2002), The Design of Everyday Things. Paperback.
2. Casey, S. M. (1998) Set Phasers on Stun: And Other True Tales of Design, Technology, and Human Error. Aegean; 2nd edition

REFERENCES BOOKS:
1. Bransford, Brown & Cocking (2000) How People Learn. National Academies Press; 2nd edition.
2. Isaacs, Ellen &Walendowski, Alan (2001), Designing from both sides of the screen. Sams Publication.

(13OE305) DISASTER MANAGEMENT
(Open Elective)

Program: B.Tech	Lecture : 3/ Week
Year: III	Tutorial : 1/ Week
Sem : II	Practical : -
Int. Max Marks : 30	Credits : 3
Ext. Max Marks: 70	

COURSE OBJECTIVES:
1. To provide students an exposure to disasters, their significance and types.
2. To ensure that students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction
3. To gain a preliminary understanding of approaches of Disaster Risk Reduction (DRR)
4. To enhance awareness of institutional processes in the country
5. To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity
6. To ensure skills and ability to design, implement and evaluate research on disasters

COURSE OUTCOMES:
The students will be able to
1. Work theoretically and practically in the processes of disaster management (disaster risk reduction, response, and recovery) and relate their interconnections.
2. Obtain, analyse, and communicate information on risks, relief needs and lessons learned from earlier disasters in order to formulate strategies for mitigation in future scenarios
3. Describe, analyse and evaluate the environmental, social, cultural, economic, legal and organisational aspects influencing vulnerabilities and capacities to face disasters.
4. Analyse and evaluate research work on the field of emergencies and disaster while demonstrating insight into the potential and limitations of science, its role in society and people's responsibility for how it is used.

UNIT-I
Introduction- Overview of Disaster Management(DM) - Concepts and definitions - Disaster, hazard, vulnerability, risk, capacity, impact, prevention, mitigation - Disaster classification- natural, manmade.

UNIT-II
Natural Disasters- meaning and nature of natural Disasters, their types and effects- floods, Drought, Cyclone, Earth Quakes, Tsunami, Volcanoes, Coastal erosion, Climate Change- Global warming, Sea level rise, Ozone depletion.

UNIT- III
Manmade Disasters- Nuclear disaster, Chemical disaster, building fire, coal fire, forest fire, oil fire, air pollution, water pollution, Deforestation, Industrial waste water pollution, Road accidents, Rail accidents, Air accidents, Sea accidents.

UNIT- IV

Disaster Risk Reduction (DRR) Disaster management- Effects to migrate natural disaster at national and global level - International strategy for disaster reduction- Concept of disaster management - National disaster management framework - Financial agreements - Role & responsibilities of NGO's - Community based organization and media Central - State - District and local administration - Armed forces in disaster response- Police & other organizations.

UNIT- V

Project/ Field work for students to understand vulnerabilities and to work in reducing disaster risks and to build a culture of safety. E.g. remote sensing & GIS/GPS for disaster management, dams, urbanization. Projects must be conceived creatively based on the geographic location and hazard profile of a region.

Some examples could be- identifying how a large dam, road/ highway or an embankment or the location of an industry affects local environment, resources or how displacement of large sections of people creates severe vulnerabilities, remote sensing & GIS/GPS etc. may be mapped by student project work.

Suggested Reading list:
1. Andharia J. Vulnerability in Disaster Discourse, JTCDM, Tata Institute of Social Sciences   Working Paper no. 8, 2008.
2. Blaikie, P, Cannon T, Davis I, Wisner B 1997. At Risk Natural Hazards, Peoples' Vulnerability and Disasters, Routledge.
3. Coppola P Damon, 2007. Introduction to International Disaster Management, Carter, Nick 1991.
4. Govt. of India: Disaster Management Act 2005, Government of India, New Delhi.
5. Parasuraman S, Acharya Niru 2000. Analysing forms of vulnerability in a disaster, The Indian Journal of Social Work, vol 61, issue 4, October.

(13CS321) LANGUAGE PROCESSORS LABORATORY

Program: B.Tech   Lecture   : -
Year: III   Tutorial : -
Sem: II   Practical : 3/Week
Int. Max Marks: 25   Credits   : 2
Ext. Max Marks: 50

COURSE OBJECTIVES:
1. To understand the working environment of Lex Tool.
2. To check the sentence validity and evaluate the expressions using YACC tool.
3. To know the Symbol table, SLR and LALR parser.
4. To acquire the skills how to design and program various kinds of compilers.
5. To understand different types of code optimizations.
6. To understand the development of symble tables.

COURSE OUTCOMES:
The students will be able to
1. Apply tools, Design the compiler
2. Expose the different parsing paradigms
3. Enhance the code optimization techniques
4. Design the sysmbol tables

LIST OF EXPERIMENTS:
1. Programs using Lex Tool
   a. Lex specification to skip comments in a file
   b. Lex specification to print two digit numbers in words.
   c. Lex specification to check the validity of given date.
   d. Lex specification to convert given octal number into decimal equivalent.
2. Programs using Yacc Tool
   a. Yacc specification to find sentence validity.
   b. Yacc specification to evaluate expressions using precedence.
   c. Yacc specification to convert binary numbers to decimal numbers
   d. Yacc specification to check the validity of given date.
3. Program to find all meaningful words and generate the tokens for the given input program.
4. Implementing Symbol Table for given HLL.
5. Implementing simple shift reduce parser.
6. Implementing SLR parser.
7. Implementing Canonical LR Parser.
8. Implementing LALR Parser.
9. Write a program in suitable high level language to carryout lexical analysis of an input program in HLL.
10. 10.Write a parser using C for any input HLL program for which lexical analysis has been Carried out.
11. Write a program to generate machine code for restricted programming expressions.
12. Experiments on code optimization of programming expressions.

REFERENCE BOOKS:
1. Dhamdhere, "System Programming and Operating Systems", McGraw Hill,   ISBN : 0-07-044555-96
2. Aho A.V., Ullman, "Principles of Compiler Design", Narosa Publications, ISBN:10:8185015619

WEB LINKS:
1. http://nptel.iitm.ac.in
2. www.amazon.com› Books › Computers and Technologybooks.google.co.in ›Computers › Programming › General.

(13CS322) WEB TECHNOLOGIES AND CASE TOOLS LABORATORY

Program: B.Tech   Lecture : -
Year: III   Tutorial : -
Sem: II   Practical : 3/Week
Int. Max Marks: 25   Credits   : 2
Ext. Max Marks: 50

COURSE OBJECTIVES:
1. To acquire the knowledge on design issues of Frames
2. To know the Web Validation Techniques
3. To understand the Component Deployment.
4. To understand and Model the Unified Library Applications
5. To create a fully functional website with MVC architecture.
6. To understand how online Book store system can be developed and maintained.

COURSE OUTCOMES:
The students will be able
1. Apply markup languages to design effective web pages.
2. Have an exposure to different webservers.
3. Design the DB applications using JDBC, JSP and Servlets.
4. Design and devlop effective online web applications and CASE tools

Week-1:
Design the following static web pages required for an online book store web site.

1) HOME PAGE:
The static home page must contain three **frames**.
Top frame   : Logo and the college name and links to Home page, Login page, Registration page, Catalogue page and Cart page (the description of these pages will be given below).
Left frame   : At least four links for navigation, which will display the catalogue of respective links.
For e.g.: When you click the link **"CSE"** the catalogue for **CSE** Books should be displayed in the Right frame.
Right frame: The *pages to the links in the left frame must be loaded here*. Initially this page contains description of the web site.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Description of the Web Site			

2) LOGIN PAGE:
    This page consists of Login ID and Password fields.

3) CATOLOGUE PAGE:
The catalogue page should contain the details of all the books available in the web site in a table.
The details should contain the following:
1) Snap shot of Cover Page.
2) Author Name.
3) Publisher.
4) Price.
5) Add to cart button
Note: Week 2 contains the remaining pages and their description.

Week-2:
4) CART PAGE:
The cart page contains the details about the books which are added to the cart and should have information like:
1) Books added to cart.
2) Price of the added book
3) Quantity of the books
4) Total price

5) REGISTRATION PAGE:
Create a "*registration form* "with the following fields
1) Name (Text field)
2) Password (password field)
3) E-mail id (text field)
4) Phone number (text field)
5) Sex (radio button)
6) Date of birth (3 select boxes)
7) Languages known (check boxes – English, Telugu, Hindi, Tamil)
8) Address (text area)

WEEK- 3:
VALIDATION:
Write *JavaScript* to validate the following fields of the above registration page.
1. Name (Name should contains alphabets and the length should not be less than 6 characters).
2. Password (Password should not be less than 6 characters length).
3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)
4. Phone number (Phone number should contain 10 digits only).

Note: You can also validate the login page with these parameters.

WEEK 4:
Design a web page using **CSS (C**ascading **S**tyle **S**heets**)** which includes the following:
1) Use different font, styles:
In the style definition you define how each selector should work (font, color etc.).
Then, in the body of your pages, you refer to these selectors to activate the styles and apply different font colour, font sizes and font styles.
2) Set a background image for both the page and single elements on the page.

3) Control the repetition of the image with the background-repeat property.
As background-repeat: repeat
 Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.
4) Define styles for links as
A:link
            A:visited
            A:active
            A:hover
      Example:
            <style type="text/css">
            A:link {text-decoration: none}
            A:visited {text-decoration: none}
            A:active {text-decoration: none}
            A:hover {text-decoration: underline, color: red,}
            </style>
5) Work with layers:
      For example:
            LAYER 1 ON TOP:
<div style="position:relative, font-size:50px, z-index:2,">LAYER 1</div><div style="position:relative, top:50, left:5, color:red, font-size:80px, z-index:1">LAYER 2</div>
LAYER 2 ON TOP:
<div style="position:relative, font-size:50px, z-index:3,">LAYER 1</div><div style="position:relative, top:50, left:5, color:red, font-size:80px, z-index:4">LAYER 2</div>
6) Add a customized cursor:
   Selector {cursor:value}

Week-5:
Write an XML file which will display the Book information which includes the following:
1) Title of the book
2) Author Name
3) ISBN number
4) Publisher name
5) Edition
6) Price
Write a Document Type Definition (DTD) to validate the above XML file.
Display the XML file as follows.
The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns.
Use XML schemas XSL and CSS for the above purpose.
Note: Give at least for 4 books. It should be valid syntactically.
Hint: You can use some xml editors like XML-spy

Week-6:
User Authentication:
Assume four users user1, user2, user3 and user4 having the passwords pwd1, pwd2, pwd3 and pwd4 respectively. Write a PHP for doing the following.

1. Create a Cookie and add these four user id's and passwords to this Cookie.
2. Read the user id and passwords entered in the Login form (week1)   and authenticate with the values (user id and passwords) available in the cookies.
If he is a valid user(i.e., user-name and password match) you should welcome him by name(user-name) else you should display " You are not an authenticated user ''.
Use init-parameters to do this.

 Week-7 and 8
        Students are divided into batches of 5 each and each batch has to draw the following diagrams using UML for an ATM system whose description is given below.
UML diagrams to be developed are:
   1. Use Case Diagram.
   2. Class Diagram.
   3. Sequence Diagram.
   4. Collaboration Diagram.
   5. State Diagram
   6. Activity Diagram.
   7. Component Diagram
   8. Deployment Diagram.
   9. Test Design.

Description for an ATM System
The software to be designed will control a simulated automated teller machine (ATM) having a magnetic stripe reader for reading an ATM card, a customer console (keyboard and display) for interaction with the customer, a slot for depositing envelopes, a dispenser for cash (in multiples of Rs. 100, Rs. 500 and Rs. 1000), a printer for printing customer receipts, and a key-operated switch to allow an operator to start or stop the machine. The ATM will communicate with the bank's computer over an appropriate communication link. (The software on the latter is not part of the requirements for this problem.)
The ATM will service one customer at a time. A customer will be required to insert an ATM card and enter a personal identification number (PIN) - both of which will be sent to the bank for validation as part of each transaction. The customer will then be able to perform one or more transactions. The card will be retained in the machine until the customer indicates that he/she desires no further transactions, at which point it will be returned - except as noted below.

The ATM must be able to provide the following services to the customer:
1. A customer must be able to make a cash withdrawal from any suitable account linked to the card, in multiples of Rs. 100 or Rs. 500 or Rs. 1000. Approval must be obtained from the bank before cash is dispensed.
2. A customer must be able to make a deposit to any account linked to the card, consisting of cash and/or checks in an envelope. The customer will enter the amount of the deposit into the ATM, subject to manual verification when the envelope is removed from the machine by an operator. Approval must be obtained from the bank before physically accepting the envelope.
3. A customer must be able to make a transfer of money between any two accounts linked to the card.
4. A customer must be able to make a balance inquiry of any account linked to the card.
5. A customer must be able to abort a transaction in progress by pressing the Cancel key instead of responding to a request from the machine.

The ATM will communicate each transaction to the bank and obtain verification that it was allowed by the bank. Ordinarily, a transaction will be considered complete by the bank once it has been approved. In the case of a deposit, a second message will be sent to the bank indicating that the customer has deposited the envelope. (If the customer fails to deposit the envelope within the timeout period, or presses cancel instead, no second message will be sent to the bank and the deposit will not be credited to the customer.)

If the bank determines that the customer's PIN is invalid, the customer will be required to re-enter the PIN before a transaction can proceed. If the customer is unable to successfully enter the PIN after three tries, the card will be permanently retained by the machine, and the customer will have to contact the bank to get it back.If a transaction fails for any reason other than an invalid PIN, the ATM will display an explanation of the problem, and will then ask the customer whether he/she wants to do another transaction.

The ATM will provide the customer with a printed receipt for each successful transaction
The ATM will have a key-operated switch that will allow an operator to start and stop the servicing of customers. After turning the switch to the "on" position, the operator will be required to verify and enter the total cash on hand. The machine can only be turned off when it is not servicing a customer. When the switch is moved to the "off" position, the machine will shut down, so that the operator may remove deposit envelopes and reload the machine with cash, blank receipts, etc.

Week - 9 and 10
Airline Ticket Reservation
Introduction: The manual system of ticket reservation takes more time and the number of reservations per day is limited. To increase the efficiency of the process, we go for online ticket reservation system. This system supports online ticket booking.

Problem statement
This system is built for user to directly access the system online to book tickets. The user can book, print, delete tickets without the help of a clerk. The administrator has control over the adding flights available for booking and has control over deleting flights that are not necessary. The administrator and user can both enter the system using their respective login details

System requirements
Microsoft visual basic 6.0 is used as the front-end for our project and msaccess is used as the back-end.

Use-case diagram
The online ticket reservation system uses the following use cases:
1. Login
2. Book ticket
3. Print ticket
4. Cancel ticket
5. View flight
6. Add flight
7. Delete flight
8. Logout

Actors involved
1) Administrator
2) Passenger

Use-case name: login
The user enters a username and a password. And if the entered details are valid, the user's details are brought to the screen; if they are invalid then an appropriate message is displayed.

Use-case name: Book ticket
The user is allowed to book a ticket on the flight he requires and the date and time as is necessary for the user. The user has to provide details such as name, flight number, date of travel, departure time, and can view the price of the ticket.

Use-case name: Print ticket
The user after booking a ticket can print a copy of the ticket reserved. The user has to provide the details about ticket number for searching in the database and passenger name for confirming passenger identity.

Use-case name: Cancel ticket
A passenger can decide to cancel a ticket after the ticket is booked. The passenger has to provide details about ticket for searching and details about him for confirmation of identity.

Use-case name: View flight
The passenger can view the flights available in the database for deciding which flight's ticket he wishes to book. The passenger can view the details of flights such as, flight number, Flight Company, price, departure and arrival times.

Use-case name: Add flight
Only the administrator has privilege to add flights. The administrator can add the flight on which tickets can be booked by the passengers. The administrator has to provide details about a new flight such as flight number, flight company name, price, departure time, date of travel.

Use-case name: Delete flight
The administrator also has the privilege to delete flights that are not necessary. The administrator has to provide details about the flight for searching and inform any passengers that have booked tickets on the flight about the change and make necessary arrangements.

Use-case name: Logout
After the necessary operations have been performed on the system, the user can choose to logout from the system

Week - 11 and 12
Course Registration System

Aim
To create a system through which students can register to the courses desired by them.

Problem statement
 The system is built to be used by students and managed by an administrator. The student and employee have to login to the system before any processing can be done. The student can

see the courses available to him/her and register to the course he /she wants. The administrator can maintain the course details and view all the students who have registered to any course.

Use-case diagram
The course registration system has the following use-cases
Login
View course details
Registration
Display details
Maintain course details
Logout

The actors involved in the system are
1. Student
2. Administrator

Use-case name: Login
The user enters the username and password and chooses if the user is student or administrator. If entered details are valid, the user's account becomes available. If it is invalid, an appropriate message is displayed to the user.

Use-case name: View course details
In this use case, a student can search all the courses available to him/her and choose the best course the user wants. The student can view the course duration, faculty and department of the courses he may choose.

Use-case name: Registration
When a student has successfully chosen a course, he/ she can register to that course. Upon registration, the student's details are stored in the database.

Use-case name: Display details
After registration to any course, the student may see the details of his current course. He/She may wish to know details about fees and other information. The administrator also has the privilege to display details of the the students and the corresponding course for which they have registered.

Use-case name: Maintain course details
The administrator has to perform the duties of maintaining the course details. Any change to the course structure is maintained by the administrator.

Use-case name: Logout
After all the desired transactions are made, the user may choose to logout from the system to save all the changes they have made.

REFERENCE BOOKS:
1. Sebesta ,"Programming world wide web",Pearson,ISBN:-10:0132665816
2. Dietel and Nieto, "Internet and World Wide Web – How to program", PHI/Pearson Education Asia,ISBN:-10:0130895504

WEB LINKS:
1. http://nptel.iitm.ac.in
2. http://ebookee.org/dl/Web-Programming-building-internet-applications-Chris-Bates-2nd-Edition- WILEY-Dreamtech
3. http://ebookee.org/Java-Server-Pages-Hans-Bergsten-SPD-O-Reilly-pdf-repost-mediafire-link_1227500.html.
4. www.amazon.com › ... › Software Engineering › Methodology.
5. http://nptel.iitm.ac.in
6. www.pearsonhighered.com › ... › Unified Modeling Language (UML)

(13CS423) SOFTWARE PROJECT MANAGEMENT

Program: B.Tech   Lecture   : 3/Week
Year: IV   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn about the conventional and evaluation of software.
2. To understand the process of managing a software from conventional to modern.
3. To understand the architecture of a model based software and the process flow.
4. To learn about the process automation, process management and its discriminents.
5. To know the economics for the next generation software.
6. To acquire the knowledge of managing, economics for conventional, modern and future software projects.

COURSE OUTCOMES:
The students will be able to
1. Develop the model from the conventional software product to the modern.
2. Analyze and design the software architecture.
3. Have an exposure for organising and managing a software project.
4. Apply, analyze, design and develop the software system/ process.

UNIT – I
Conventional Software Management: The waterfall model, conventional software Management performance.

Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.

UNIT – II
The Old Way and The New: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases.

Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

UNIT – III
Model Based Software Architectures: A Management perspective and technical perspective.

Work Flows of the process: Software process workflows, Iteration workflows.

Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments.

Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

UNIT – IV
Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building blocks, The Project Environment.

Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

UNIT – V
Tailoring the Process: Process discriminants.

Future Software Project Management: Modern Project Profiles, Next generation Software economics, modern process transitions.

Case Study: The command Center Processing and Display system- Replacement (CCPDS-R)

TEXT BOOKS:
1. Walker Royce: "Software Project Management", Pearson Education, 2005,ISBN:9788177583786
2. Bob Hughes and Mike Cotterell: "Software Project Management" Tata McGraw-Hill Edition,ISBN:-10:0070586721

REFERENCE BOOKS:
1. Joel Henry, "Software Project Management", Pearson Education,ISBN:9788131717929
2. Pankaj Jalote," Software Project Management in practice", Pearson Education.2005,ISBN:-10:0201737213

(13CS424) DATA WAREHOUSING AND DATA MINING

Program: B.Tech   Lecture : 3/Week
Year: IV   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn the concepts on Knowledge Discovery in Databases.
2. To learn classification, clustering and association rules for the OLAP technology.
3. To understand the concept of data warehousing focusing on architecture and design.
4. To know about the mining patterns and predictions.
5. To acquire the knowledge on multi dimentional data analysis.
6. To learn the impact of data mining on research prototypes and society.

COURSE OUTCOMES:
The students will be able to
1. Have an exposure of OLAP technology on data.
2. Analyze and design the data warehouses.
3. Apply the patterns, associations, classifications, correlations and predictions for effective retrival of data from the warehouses.
4. Analyze the multidimentional data using various data mining techniques.

UNIT –I
Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or a Data Warehouse System, Major issues in Data Mining.

Data Preprocessing: Need for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

UNIT - II
Data Warehouse and OLAP Technology for Data Mining: Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, Further Development of Data Cube Technology, From Data Warehousing to Data Mining Data Cube Computation and Data Generalization: Efficient Methods for Data Cube Computation, Further Development of Data Cube and OLAP Technology, Attribute-Oriented Induction.

UNIT - III
Mining Frequent Patterns, Associations and Correlations: Basic Concepts, Efficient and Scalable Frequent Itemset Mining Methods, Mining various kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint-Based Association Mining.

Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification,

Classification by Backpropagation, Support Vector Machines, Associative Classification, Lazy Learners, Other Classification Methods, Prediction, Accuracy and Error measures, Evaluating the accuracy of a Classifier or a Predictor, Ensemble Methods

UNIT –IV
Cluster Analysis Introduction: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Clustering High-Dimensional Data, Constraint-Based Cluster Analysis, Outlier Analysis - Mining Streams, Time Series and Sequence Data: Mining Data Streams, Mining Time-Series Data, Mining Sequence Patterns in Transactional Databases, Mining Sequence Patterns in Biological Data, Graph Mining, Social Network Analysis and Multirelational Data Mining.

UNIT –V
Mining Object, Spatial, Multimedia, Text and Web Data: Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Data Mining, Multimedia Data Mining, Text Mining, Mining the World Wide Web.

Applications and Trends in Data Mining: Data Mining Applications, Data Mining System Products and Research Prototypes, Additional Themes on Data Mining and Social Impacts of Data Mining.

TEXT BOOKS:
1. Jiawei Han and Micheline Kamber, "Data Mining – Concepts and Techniques" Morgan Kaufmann Publishers, 2nd Edition, 2006,ISBN:10:15586090161
2. Pang-Ning Tan, Michael Steinbach and Vipin Kumar, "Introduction to Data Mining" – Pearson education,ISBN:10:0321321367

REFERENCE BOOKS:
1. Sam Aanhory and Dennis Murray ,"Data Warehousing in the Real World", Pearson Edn Asia,ISBN:0-201-17519-3
2. K.P.Soman,S.Diwakar,V.Ajay , "Insight into Data Mining" ,PHI,2008,ISBN:978-81-203-2897-6

WEB LINKS:
1. http://nptel.iitm.ac.in
2. books.google.co.in › Computers › Database Management › General

(13CS425) NETWORK PROGRAMMING

Program: B.Tech   Lecture : 4/Week
Year: IV   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1.   To understand the different networking models.
2.   To understand the design aspects of client -server technology.
3.   To learn how to develop network applications using socket programming.
4.   To understand the design considerations in building network applications.
5.   To understand the system calls for making use of network programming.
6.   To understand the remote procedure system.

COURSE OUTCOMES:
The students will be able to
1.   Accomplish different networks and their implementations.
2.   Develop client-server applications using connection oriented and connectionless service
     protocols.
3.   Apply locking systems to develop IPC through file management system.
4.   Have an exposure to develop the programs using socket programming.

UNIT – I
Introduction to Network Programming: OSI model, Unix standards, TCP and UDP and
TCP connection establishment and Format, Buffer sizes and limitation, standard internet
services, Protocol usage by common internet application.**Sockets** Address structures, value –
result arguments, Byte ordering and manipulation function and related functions

UNIT - II
Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function,
concurrent servers. Close function and related function.

TCP client server: Introduction, TCP Echo server functions, Normal startup, terminate and
signal handling server process termination, Crashing and Rebooting of server host shutdown
of server host.

UNIT - III
I/O Multiplexing and Socket Options: I/O Models, select function, Batch input, shutdown
function, poll function, TCP Echo server, getsockopt and setsockopt functions. Socket
states, Generic socket option IPV6 socket option ICMPV6 socket option IPV6 socket option
and TCP socket options.

UNIT - IV
Elementary Udp Sockets: Introduction UDP Echo server function, lost datagram, summary
of UDP example, Lack of flow control with UDP, determining outgoing interface with

UDP.Elementary name and Address conversions: DNS, gethost by Name function, Resolver option, Function and IPV6 support, uname function, other networking information.

UNIT - V
IPC: Introduction, File and record locking, Pipes, FIFOs streams and messages, Name spaces, system IPC, Message queues, Semaphores.

Remote Login: Terminal line disciplines, Pseudo-Terminals, Terminal modes, Control Terminals, rlogin Overview, RPC Transparency Issues.

TEXT BOOKS:
1. W.Richard Stevens, "UNIX Network Programming", Vol. I, Sockets API, 2nd Edition, Pearson Edn. Asia, ISBN:9788178080147
2. M. J. Rochkind, "Advanced UNIX Programming", 2nd Edition, Pearson Education, ISBN:0471419028

REFERENCE BOOKS:
1. T CHAN, "UNIX Systems Programming using C++", PHI,ISBN:10:0130465534
2. Graham GLASS, King abls,"UNIX for Programmers and Users", 3rd Edition Pearson Education,ISBN:0130465534

WEB LINKS:
1. np-material.blogspot.com/.../unix-network-programming-1st-Edition.
2. http://thebookslibrary.blogspot.in/2008/12/unix-network-programming-vol-i-sockets.html

(13CS426) CRYPTOGRAPHY AND NETWORK SECURITY

Program: B.Tech   Lecture   : 4/Week
Year: IV   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 4
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn the basics of information security and different types of algorithms for enhancing the security.
2. To acquire the knowledge of providing security through different kinds of mechanisms.
3. To learn the concepts of cryptography and cryptanalysis.
4. To know the different types of viruses and antivirus.
5. To understand the concepts of IP security and Web security.
6. To understand the privacy enhancing mechanisms through firewalls and intrusion detection systems.

COURSE OUTCOMES:
The students will be able to
1. Have an exposure to the different system attacks and viruses.
2. Apply conventional and modern PKCS,design and develop an efficient security systems.
3. Design an effective intrusion detection systems and trusted systems through fire wall architecture.
4. Apply the protocals encaspulation, payload, SSL, TLS and SET to design and develop efficient online secure system.

UNIT – I
Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs, Buffer overflow and format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.

UNIT – II
Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC.

UNIT – III
Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service.

Email privacy: Pretty Good Privacy (PGP) and S/MIME.

UNIT – IV

IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management.Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).

UNIT – V

Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3. Intruders, Viruses and related threats. Firewall Design principles, Trusted Systems. Intrusion Detection Systems.

TEXT BOOKS:

1. William Stallings , "Network Security Essentials (Applications and Standards)", Pearson Education,ISBN:-10:0-13-610805-9
2. Stallings,"Cryptography and network Security", Third Edition, PHI/Pearson,ISBN:10:0130914290

REFERENCE BOOKS:

1. Whitman, "Principles of Information Security", Thomson,ISBN:10:1111138214
2. Robert Bragg, Mark Rhodes, "Network Security: The complete reference", TMH,ISBN:10:0072226978

WEB LINKS:

1. http://nptel.iitm.ac.in
2. www.pearsoned.co.in › ... › Engineering and Computer Science

(13CS427A) HIGH PERFORMANCE COMPUTING
(Elective-I)

Program: B.Tech   Lecture : 3/Week
Year: IV   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn the levels of parallelism and models.
2. To understand the basic components of parallel programming
3. To know the design issues of parallel programming.
4. To understand the power aware techniques and management.
5. To awre of the recently developed computing techniques its impact on HPC.
6. To understand the concepts which are required for HPC

COURSE OUTCOMES:
The student will be able to
1. Apply the basic concepts of parallelism and models to design HPC.
2. Acquire the knowledge in modeling the architecture of high performance computing.
3. Apply the components synchronization, scheduling job allocation, job partitioning to design parallel computing.
4. Have an exposure of recent developments in computing technology and its impact on HPC.

UNIT I
Parallel Processing Concepts: Levels of parallelism (instruction, transaction, task, thread, memory, function) -Models (SIMD, MIMD, SIMT, SPMD, Dataflow Models, Demand-driven Computation etc) - Architectures: N-wide superscalar architectures, multi-core, multi-threaded.

UNIT II
Parallel Programming Models: Processor Architecture, Interconnect, Communication, Memory Organization, and Programming Models in high performance computing architectures: (Examples: IBM CELL BE, Nvidia Tesla GPU, Intel Larrabee Microarchitecture and Intel Nehalem microarchitecture) - Memory hierarchy and transaction specific memory design - Thread Organization.

UNIT III
Fundamental Design Issues in Parallel Computing: Synchronization - Scheduling - Job Allocation - Job Partitioning - Dependency Analysis - Mapping Parallel Algorithms onto Parallel Architectures - Performance Analysis of Parallel Algorithms .

UNIT IV
Fundamental Limitations Facing Parallel Computing: Bandwidth Limitations - Latency Limitations - Latency Hiding/Tolerating Techniques and their limitations - Power-Aware Computing and Communication - Power-aware Processing Techniques - Power-aware Memory Design - Power-aware Interconnect Design - Software Power Management.

UNIT V
Advanced Topics: Petascale Computing - Optics in Parallel Computing - Quantum Computers - Recent developments in Nanotechnology and its impact on HPC.

TEXT BOOKS:
1. George S. Almasi and Alan Gottlieb, "Highly Parallel Computing" ,Benjamin – Cummings Publishiing company,ISBN:0-8053-0177-1
2. Kai Hwang, "Advanced Computer Architecture: Parallelism, Scalability, Programmability", McGraw Hill 1993,ISBN-10:00703162281

REFERENCE BOOKS:
1. Kai Hwang, "Scalable Parallel Computing", McGraw Hill 1998,ISBN:0070317984
2. William James Dally and Brian Towles, "Principles and Practices on Interconnection Networks", Morgan Kauffman, 2004.

(13CS427B) INFORMATION RETRIEVAL SYSTEMS
(Elective-I)

Program: B.Tech   Lecture   : 3/Week
Year: IV   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To know the fundamentals of Information Retrieval Systems.
2. To understand the capabilities of IRS.
3. To acquire skills on Indexing structure
4. To know the different types of data structures.
5. To acquire the knowledge on Text Retrieval Systems.
6. To acquire the knowlwdge on various ways of IRS

COURSE OUTCOMES:
The students will be able to
1. Apply the catalog, indexing, the student design effective information.
2. Accomplish the datastructure and automatic indexing for the hypertext.
3. Apply searching procedure for user- text, design and implement the system.
4. Accomplish the procedure relates to document and term oriented visualization technologies.

UNIT – I
Introduction: Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses.

UNIT - II
Information Retrieval System Capabilities: Search, Browse, Miscellaneous. Cataloging and Indexing: Objectives, Indexing Process, Automatic Indexing, Information Extraction.

UNIT - III
Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure.

Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages

UNIT - IV
Document And Term Clustering
 Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters.

User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, Weighted searches of

Boolean systems, Searching the Internet and hypertext. Information Visualization: Introduction, Cognition and perception, Information visualization technologies.

UNIT- V
Text Search Algorithms: Introduction, Software text search algorithms, Hardware text search systems.

Information System Evaluation: Introduction, Measures used in system evaluation, Measurement example – TREC results

TEXT BOOKS:
1. Kowalski, Gerald, Mark T Maybury, "Information Retrieval Systems: Theory and Implementation", Kluwer Academic Press, 1997,ISBN:-10:0792379241
2. Robert Korfhage, "Modern Information Retrival" Yates Pearson Education Information Storage and Retieval, John Wiley and Sons,ISBN:0-201-39829-X

REFERENCE BOOKS:
1. Frakes, W.B., Ricardo Baeza-Yates: "Information Retrieval Data Structures and Algorithms", Prentice Hall, 1992.
2. Gobinda B Chowdhury "Information to Modern Information Retrival" Library association publishing 1999.

WEB LINKS:
1. frakes.cs.vt.edu/frakespubs.html
2. books.google.co.in › Computers › Database Management › General

(13CS427C) DISTRIBUTED SYSTEMS
(Elective-I)

Program: B.Tech   Lecture   : 3/Week
Year: IV   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the components of Distributed Systems.
2. To learn about the Synchronization and fault tolerance of distributed systems.
3. To understand the design and implementation of different distributed file systems.
4. To know the Memory Management systems of Distributed File Systems.
5. To understand the different case studies of Distributed Systems.
6. To understand the design and usage of distributed file systems in the real world.

COURSE OUTCOMES:
The students will be able to
1. Apply, analyze and design effective distributed system.
2. Accomplish the fault and it's to lerance.
3. Design the distributed file systems through shared variable, object based and bus based multi processors.
4. Have an exposure of differentiating the file systems in the real world.

UNIT - I
Introduction to Distributed Systems: Distributed systems: Goals Hardware Concepts Software - design Communication distributed systems: Layered Protocol: ATM Networks client server model - remote procedure call - group communication.

UNIT - II
Synchronization: Clock synchronization - mutual exclusion - election atomic transactions - dead locks. Process and Processors: Threads - System models processor allocation - scheduling fault tolerance

UNIT - III
Real time distributed systems, Distributed file systems: File system design and implementation - trends in distributed file systems.

UNIT - IV
Shared Memory: Introduction - bus based multi processors ring based multiprocessors switched. Multiprocessors - NUMA comparison of shared memory systems - consistency models - page based distributed shared memory.

UNIT - V
Shared variable distributed shared memory; object based distributed shared memory, Case studies: MACH and CHORUS

TEXT BOOKS:

1. Andrew S.Tanenbaum: "Distributed Operating System", Prentice Hall International Inc.1995,ISBN:0-13-031358-0
2. George Coulouris, Jean Dollimore and Tim Kindberg "Distributed Systems: Concepts and Design" edition – Wesley Pearson Education 2001,ISBN:-10:0273760599

REFERENCE BOOKS

1. George Coulouris , Jean, Dollimore Tim Kindberg), Gordon Blair, " Distributed Systems: Concepts and Design" (5th Edition) ,edition – Wesley 2011,ISBN:10:0132143011
2. Paolo Sivilotti," Introduction to Distributed Systems", 2005,ISBN:0321349601

WEB LINKS:

1. http://www.gmrit.org/resources/syllabus_mca.pdf
2. books.google.co.in/books?isbn=3540401962.

(13CS427D) DESIGN PATTERNS
(Elective-I)

Program: B.Tech	Lecture : 3/Week
Year: IV	Tutorial : 1/Week
Sem: I	Practical : -
Int. Max Marks: 30	Credits : 3
Ext. Max Marks: 70	

COURSE OBJECTIVES:
1. To understand the fundamental concepts of C++ and the design patterns.
2. To learn about the user interfaces, standards of designing a document editor.
3. To understand the Structural Patterns .
4. To understand the Behavioural pattern.
5. To learn about the dynamics of the design patterns.
6. To know the selection and usage of design patterns.

COURSE OUTCOMES:
The students will be able to
1. Apply formal notations of C++, design and develop pattern of user choice.
2. Accomplish UI and design an efficient editor.
3. Determine the prototypes, abstract factory to design and develop catalog pattern.
4. Apply the behavioural modelling principles design the behavioural pattern for a system.

UNIT – I
Review of Formal Notations and Foundation Classes in C++: Class Diagram, Object Diagram, Interaction Diagram Examples, List, Iterator, ListIterator, Point, Rect, Coding in C++. Introduction to Design Patterns: Design Pattern Definition, Design Patterns in Small Talk MVC, Describing Design Patterns, Catalog of Design Patterns, Organizing The Catalog, Solving of Design Problems Using Design Patterns, Selection of A Design Pattern, Use of Design Patterns.

UNIT - II
Designing a Document Editor: A Case Study: Design Problems, Document Structure, Formatting, Embellishing the User Interface, Supporting Multiple Look and Feel Standards, Supporting Multiple Window Systems, User Operations, Spelling Checking and Hyphenation.

UNIT - III
Design Patterns Catalog: Creational Patterns, Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns. Structural Patterns-1: Adapter, Bridge, Composite, Decorator. Structural Patterns-2 and Behavioral Patterns-1: Structural Patterns: Façade, Flyweight, Proxy, Discuss of Structural Patterns

UNIT - IV
Behavioral Patterns: Chain of Responsibility Command, Interpreter. Behavioral Patterns-2: Iterator, Mediator, Observer, State, Strategy, Template Method, Visitor, Discussion of Behavioral Patterns.

UNIT - V
Behavioral Patterns-3: State, Strategy, Template Method, Visitor, Discussion of Behavioral Patterns, Expectations from Design Patterns.

TEXT BOOKS:
1. Gamma, Belm, Johnson,"Design Patterns: Elements of Reusable Object Oriented Software", 1995,Pearson EducationISBN:10:0201633612
2. Eric Freeman, "Head First Design Patterns", Oreilly-SPD,ISBN:10:0596007124

REFERENCE BOOKS:
1. Cooper, "Java Design Patterns", Pearson Education,ISBN:6201-48539-7
2. Horstmann, "Object Oriented Design and Patterns", Wiley,ISBN:10:0471744875

WEB LINKS:
1. shop.oreilly.com/product/9780596007126.do
2. ww.amazon.com/Design-Patterns-Elements.../dp/0201633612

(13CS428A) MOBILE APPLICATION DEVELOPMENT
(Elective-II)

Program: B.Tech   Lecture : 3/Week
Year: IV   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn about the technologies associating with wireless and PDA's
2. To know about the architecture and the programming principles for MIDlet.
3. To learn the design issues of user interfaces.
4. To learn about how effectively the record can be managed in a system .
5. To know about the framework and managing a session .
6. To acquire the knowledge on connection oriented protocols and communication management.

COURSE OUTCOMES:
The students will be able to
1. Apply the J2ME fundamentals, design and develop PDA's etc.
2. Accomplish the J2ME model architecture for the development of application environment.
3. Apply storage, record based systems to design effective RMS for mobile application.
4. Accomplish the Generic Connection framework for the development of mobile applications through HTTP, system management and transimission.

UNIT- I
J2ME Overview: Java 2 Micro Edition and the World of Java, Inside J2ME, J2ME and Wireless Devices Small Computing Technology: Wireless Technology, Radio Data Networks, Microwave Technology, Mobile Radio Networks, and Messaging, Personal Digital Assistants

UNIT - II
J2ME Architecture and Development Environment: J2ME Architecture, Small Computing Device Requirements, Run-Time Environment, MIDlet Programming, Java Language for J2ME, J2ME Software Development Kits, Hello World J2ME Style, Multiple MIDlets in a MIDlet Suite, J2ME Wireless Toolkit J2ME Best Practices and Patterns: The Reality of Working in a J2ME World, Best Practices

UNIT - III
Commands, Items, Event Processing: J2ME User Interfaces, Display Class, the Palm OS Emulator, Command Class, Item Class, Exception Handling High-Level Display: Screens: Screen Class, Alert Class, Form Class, Item Class, List Class, Text Box Class, Ticker Class Low-Level Display: Canvas: The Canvas, User Interactions, Graphics, Clipping Regions, Animation

UNIT - IV

Record Management System: Record Storage, Writing and Reading Records, Record Enumeration, Sorting Records, Searching Records, Record Listener JDBC Objects: The Concept of JDBC, JDBC Driver Types, JDBC Packages, Overview of the JDBC Process, Database Connection, statement Objects, Result set, Transaction Processing, Metadata, Data Types, Exceptions JDBC and Embedded SQL: Model Programs, Tables, Indexing, Inserting Data into Tables, Selecting Data from a Table, Metadata, Updating Tables, Deleting Data form a Table, Joining Tables, Calculating Data, Grouping and Ordering Data, Subqueries, VIEWs

UNIT - V

Generic Connection Framework: The Connection, Hypertext Transfer Protocol, Communication Management Using HTTP Commands, SessionManagement,Transmitas as a Background Process.

TEXT BOOKS:

1. James Keogh," J2ME: The Complete Reference", Tata Mc Graw Hill, ISBN:10: 0072227109
2. Michael Juntao Yuan, "Enterprise J2ME: Developing Mobile Java Applications", Pearson Education, 2004, ISBN:81-297-0694-6

REFERENCE BOOKS:

1. J.Knudsen, Kicking Butt with MIDP and MSA: "Creating Great Mobile Applications",1st edition, Pearson,ISBN:10:0-321-46342-0
2. Sing Li, Jonathan B. Knudsen, "Beginning J2ME: From Novice to Professional", Third Edition, Apress2005,ISBN:10:15905947971

(13CS428B) SCRIPTING LANGUAGES
(Elective-II)

Program: B.Tech	Lecture : 3/Week
Year: IV	Tutorial : 1/Week
Sem: I	Practical : -
Int. Max Marks: 30	Credits : 3
Ext. Max Marks: 70	

COURSE OBJECTIVES:
1. To understand the preliminaries of PERL Script
2. To know the basics of PHP.
3. To know the TCL Programming Concepts
4. To understand the Python Language.
5. To acquire knowledge in integrated web applications.
6. To understand the security issues through internet programming.

COURSE OUTCOMES:
The students will be able to
1. Apply, analyze the Scripts to design and develop web applications through PERL languages.
2. Apply the PHP program fundamentals design and implement Scripts for Web based system.
3. Model, design applications using Phython.
4. Design and implement security issues through internet programming.

UNIT - I
Introduction to PERL and Scripting Scripts and Programs, Origin of Scripting , Scripting Today, Characteristics of Scripting Languages, Web Scripting, and the universe of Scripting Languages. PERL- Names and Values, Variables, Scalar Expressions, Control Structures, arrays, list, hashes, strings, pattern and regular expressions, subroutines,advance perl - finer points of looping, pack and unpack, filesystem, eval, datastructures, packages, modules, objects, interfacing to the operating system, Creating Internet ware applications, Dirty Hands Internet Programming, security Issues.

UNIT - II
PHP Basics- Features,Embedding PHP Code in your Web pages,Outputting the data to the browser, Datatypes, Variables, Constants,expressions,string interpolation, control structures Function,Creating a Function,Function Libraries,Arrays,strings and Regular Expressions.

UNIT - III
Advanced PHP Programming Php and Web Forms, Files, PHP Authentication and Methodolgies -Hard Coded, File Based, Database Based, IP Based, Login Administration,Uploading Files with PHP, Sending Email using PHP, PHP Encryption Functions, the Mcrypt package, Building Web sites for the World –TranslatingWebsites-Updating Web sites Scripts, Creating the Localization Repository,Translating Files, text,Generate Binary Files, Set the desired language within your scripts,Localizing Dates, Numbers and Times.

UNIT - IV

TCL Structure, syntax, Variables and Data in TCL, Control Flow, Data Structures, input/output, procedures , strings , patterns, files, Advance TCL- eval, source, exec and uplevel commands, Name spaces, trapping errors, event driven programs, making applications internet aware, Nuts and Bolts Internet Programming, Security Issues, C Interface. Tk-Visual Tool Kits, Fundamental Concepts of Tk, Tk by example, Events and Binding, Perl-Tk.

UNIT – V

Introduction to Python langauge, python-syntax,statements,functions,Built-in-functions and Methods, Modules in python,Exception Handling, Integrated Web Applications in Python – Building Small, Efficient Python Web Systems ,Web Application FrameworkF

TEXT BOOKS:

1. David Barron,"The World of Scripting Languages", Wiley Publications, ISBN:10:0471998869
2. Julie Meloni and Matt Telles,"PHP 6 Fast and Easy Web Development", Cengage Learning Publications,ISBN:10:1598634712

REFERENCE BOOKS:

1. I.Bayross and S.Shah,"PHP 5.1", The X Team,SPD,ISBN:818404075X
2. Jason Gilmore, "Beginning PHP and MySQL", 3rd Edition , Apress Publications (Dream tech.),ISBN:1590598628

WEB LINKS:

1. eu.wiley.com/WileyCDA/Section/id-350340.html?filter...sort
2. www.apress.com/9781590598627

(13CS428C) MOBILE COMPUTING
(Elective-II)

Program: B.Tech   Lecture : 3/Week
Year: IV   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn the standards of Wireless LAN and ADHOC networks.
2. To acquire knowledge on Mobile nodes, IP and the latest protocols.
3. To understand the components of mobile computing.
4. To know about Ubiquitous access to information, anywhere, anyplace, and anytime.
5. To acquire the skills relating to Cellular transmission and wireless communication.
6. To acquire the basic skills required on operating systems relating to wireless communication.

COURSE OUTCOMES:
The students will be able to
1. Accomplish the hyperLAX Architecture.
2. Design and develop effective protocols for GSH, IEEE 802.11.
3. Accomplish TCP/IP protocols, clustering of sensor design securing application.
4. Accomplish the various OS technologies suitable for the different of myfile Complexity.

UNIT – I
Hyper LAN Protocol Architecture, Physical Layer, Channel Access Control Sub-layer, MAC Sub-layer, Information Bases and Networking. WLAN: Infrared vs. Radio Transmission, Infrastructure and Ad Hoc Networks, IEEE 802.11. Bluetooth: User Scenarios, Physical Layer, MAC Layer, Networking, Security, Link Management. GSM: Mobile Services, System Architecture, Radio Interface, Protocols, Localization and Calling, Handover, Security and New Data Services, Mobile Computing (MC): Introduction to MC, Novel Applications, Limitations, and Architecture.

UNIT - II
Motivation for a Specialized MAC (Hidden and Exposed Terminals, Near and Far Terminals), SDMA, FDMA, TDMA, CDMA. MAC Protocols for GSM, Wireless LAN (IEEE802.11), Collision Avoidance (MACA, MACAW) Protocols.IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Location Management, Registration, Tunneling and Encapsulation, Route Optimization, DHCP

UNIT - III
Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Transport Layer Protocols for Mobile Networks.Basics of Wireless Sensors and Applications, The Mica Mote, Sensing and Communication Range, Design Issues, Energy consumption, Clustering of Sensors, Applications

UNIT - IV
Data Retrieval in Sensor Networks, Classification of WSNs, MAC Layer, Routing Layer, High-Level Application Layer Support, Adapting to the Inherent Dynamic Nature of WSNs Sensor Network Platforms and Tools, Sensor Network Hardware, Sensor Network Programming Challenges, Node-Level Software Platforms.

UNIT - V
Operating System: TinyOS, Imperative Language: nesC, Dataflow Style Language: TinyGALS, Node-Level Simulators, ns-2 and its Sensor Network Extension, TOSSIM.

TEXT BOOKS:
1. Raj Kamal, "Mobile Computing", Oxford University Press, 2007, ISBN: 0195686772
2. Jochen Schiller, "Mobile Communications", Addison-Wesley, Second Edition, 2004, ISBN:813172426

REFERENCE BOOKS:
1. C. Siva Ram Murthy, B.S.Murthy,"Adhoc Wireless Networks: Architectures and Protocols",Pearson Education, 2004,ISBN:10:0133007065
2. Fei Hu, Xiaojun Cao,"Wireless Sensor Networks: Principles and Practice", An Auerbach Book,CRC Press, Taylor and Francis Group, 2010,ISBN:10:1420092154

WEB LINKS:
1. http://nptel.iitm.ac.in
2. books.google.com › ... › Hardware › Personal Computers › General
3. www.pearsonhighered.com › ... › Mobile Communications.

(13CS428D) DIGITAL IMAGE PROCESSING
(Elective-II)

Program: B.Tech   Lecture : 3/Week
Year: IV   Tutorial : 1/Week
Sem: I   Practical : -
Int. Max Marks: 30   Credits : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To learn about the fundamental aspects of digital image processing and the relationship among the pixels
2. To know about the techniques involved in enhancing an image
3. To learn about the image degradation restoration process
4. To know about the processing of colour images
5. To learn about the image segmentation principles.
6. To know about stastical and structural methods

COURSE OUTCOMES:
The students will be able to
1. Apply the basic digital image fundamentals and the relationship among the pixels for an image.
2. Accomplish various procedures, enhancement of an image in the spatial domain.
3. Apply the wireless fundamentals to model, design the image techniques.
4. Apply pattern and segmentation, design optimised format of an image.

UNIT I
Introduction: Examples of fields that use digital image processing, fundamental steps in digital image processing, components of image processing system.. Digital Image Fundamentals: A simple image formation model, image sampling and quantization, basic relationships between pixels.

UNIT II
Image Enhancement in the Spatial Domain: Basic gray-level transformation, histogram processing, enhancement using arithmetic and logic operators, basic spatial filtering, smoothing and sharpeningspatial filters, combining the spatial enhancement methods.

UNIT III
Image Restoration: A model of the image degradation/restoration process, noise models, restoration in the presence of noise–only spatial filtering, Weiner filtering, constrained least squares filtering, geometric transforms; Introduction to the Fourier transform and the frequency domain, estimating the degradation function.

UNIT IV
Color Image Processing: Color fundamentals, color models, pseudo color image processing, basics of full–color image processing, color transforms, smoothing and sharpening, color segmentation.

Image Compression: Fundamentals, image compression models, error-free compression, loss predictive coding, image compression standards. Morphological Image Processing: Preliminaries, dilation, erosion, open and closing, hit or miss transformation, basic morphologic algorithms.

UNIT V
Image Segmentation: Detection of discontinuous, edge linking and boundary detection, thresholding, region–based segmentation. Object Recognition : Patterns and patterns classes, recognition based on decision–theoretic methods, matching, optimum statistical classifiers, neural networks, structural methods – matching shape numbers, string matching.

TEXT BOOKS:
1. Rafeal C.Gonzalez, Richard E.Woods, "Digital Image Processing", Second Edition, Pearson Education/PHI,ISBN:10:0982085400
2. Milan Sonka, Vaclav Hlavac and Roger Boyle, "Image Processing, Analysis and Machine Vision", Second Edition, Thomson Learning.ISBN:10:1133593607

REFERENCE BOOKS:
1. Alasdair McAndrew," Introduction to Digital Image Processing with Matlab", Thomson Course Tec, ISBN:0534400116
2. Rafeal C.Gonzalez, Richard E.Woods, Steven L. Eddins, "Digital Image Processing using Matlab", Pearson Education, ISBN:10:0130085197

(13CS433) NETWORK PROGRAMMING LABORATORY

Program: B.Tech   Lecture   : -
Year: IV   Tutorial : -
Sem: I   Practical : 3/Week
Int. Max Marks: 25   Credits   : 2
Ext. Max Marks: 50

COURSE OBJECTIVES:
1. To acquire knowledge on IPC Programme.
2. To know about the Shared Memory Concepts.
3. To acquire skills on design and Implementation issues for the TCP Client/Server Programme.
4. To learn the Design and Implemention issues of the UDP Client/Server Programme.
5. To learn a file transfer management system.
6. To acquire skills on avoiding race conditions through Semaphores.

COURSE OUTCOMES:
The students will be able to
1. Develop and design effective network applications
2. Expose the various client/server applications
3. Design the network services
4. Expose various network issues

Recommended Systems/Software Requirements:

1. Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space LAN Connected
2. Any flavour of Unix / Linux

Week -1:
Implement the following forms of IPC.
   a)Pipes   b)FIFO

Week- 2:
Implement file transfer using Message Queue form of IPC

Week 3:
Write a programme to create an integer variable using shared memory concept and increment the variable simultaneously by two processes. Use semaphores to avoid race conditions

Week- 4:
Design TCP iterative Client and server application to reverse the given input sentence

Week- 5:
Design TCP iterative Client and server application to count the number of vowels present in given input sentence

Week 6:
Design TCP client and server application to transfer file

Week- 7:
Design a TCP concurrent server to convert a given text into upper case using multiplexing system call "select"

Week- 8:
Design a TCP concurrent server to echo given set of sentences using poll functions

Week -9:
Design UDP Client and server application to reverse the given input sentence

Week -10:
Design UDP Client server to transfer a file

Week- 11:
Design using poll client server application to multiplex TCP and UDP requests for converting a given text into upper case.

Week -12:
Design a RPC application to add and subtract a given pair of integers

REFERENCE BOOKS:
1. Richard Stevens, "Advance Unix Programming", Pearson Education, Second Edition, ISBN:0-13-042411-0
2. N.B. Venkateswarlu, "Advance Unix Programming", BS Publication, ISBN No.:0471419028

WEB LINKS:
1. np-material.blogspot.com/.../unix-network-programming-1st-Edition..
2. http://thebookslibrary.blogspot.in/2008/12/unix-network-programming-vol-i-sockets.html.

(13CS434) DATA WAREHOUSING AND DATA MINING LABORATORY

Program: B.Tech   Lecture : -
Year: IV   Tutorial : -
Sem: I   Practical : 3/Week
Int. Max Marks: 25   Credits   : 2
Ext. Max Marks: 50

COURSE OBJECTIVES:
1. To acquire the knowledge to implement the credit risk management.
2. To know the Construction of Data warehouse.
3. To learn the different mining procedures to retriev the data from the database.
4. To understand the usage of tools relating to data mining and warehousing.
5. To learn about the DataMarts and its identification.
6. To acquire the skills on classification, association rules and their implementation.

COURSE OUTCOMES:
The students will be able to
1. Design and develop data warehouse
2. Exposure on various mining tools
3. Apply OLAP Technolgy for retrival of data
4. Apply, design and develop real world data warehousing and mining applications

Task 1
Credit Risk Assessment
Description: The business of banks is making loans. Assessing the credit worthiness of an applicant is of crucial importance. You have to develop a system to help a loan officer decide whether the credit of a customer is good, or bad. A bank's business rules regarding loans must consider two opposing factors. On the one hand, a bank wants to make as many loans as possible. Interest on these loans is the banks profit source. On the other hand, a bank cannot afford to make too many bad loans. Too many bad loans could lead to the collapse of the bank. The bank's loan policy must involve a compromise: not too strict, and not too lenient. To do the assignment, you first and foremost need some knowledge about the world of credit. You can acquire such knowledge in a number of ways. 1. Knowledge Engineering. Find a loan officer who is willing to talk. Interview her and try to represent her knowledge in the form of production rules. 2. Books. Find some training manuals for loan officers or perhaps a suitable textbook on finance. Translate this knowledge from text form to production rule form. 3. Common sense. Imagine yourself as a loan officer and make up reasonable rules which can be used to judge the credit worthiness of a loan applicant. 4. Case histories. Find records of actual cases where competent loan officers correctly judged when, and when not to, approve a loan application.

The German Credit Data
Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such dataset, consisting of 1000 actual cases collected in Germany. credit dataset

(original) Excel spreadsheet version of the German credit data. In spite of the fact that the data is German, you should probably make use of it for this assignment. (Unless you really can consult a real loan officer!) A few notes on the German dataset • DM stands for Deutsche Mark, the unit of currency, worth about 90 cents Canadian (but looks and acts like a quarter). • owns_telephone. German phone rates are much higher than in Canada so fewer people own telephones. • foreign_worker. There are millions of these in Germany (many from Turrkey). It is very hard to get German citizenship if you were not born of German parents. • There are 20 attributes used in judging a loan applicant. The goal is the classify the applicant into one of two categories, good or bad.

Subtasks
(Turn in your answers to the following tasks)
1. List all the categorical (or nominal) attributes and the real-valued attributes seperately. (5 marks)
2. What attributes do you think might be crucial in making the credit assessement ? Come up with some simple rules in plain English using your selected attributes.
3. One type of model that you can create is a Decision Tree - train a Decision Tree using the complete dataset as the training data. Report the model obtained after training.
4. Suppose you use your above model trained on the complete dataset, and classify credit good/bad for each of the examples in the dataset. What % of examples can you classify correctly ? (This is also called testing on the training set) Why do you think you cannot get 100 % training accuracy ?
5. Is testing on the training set as you did above a good idea ? Why orWhy not ?
6. One approach for solving the problem encountered in the previous question is using cross-validation ? Describe what is cross-validation briefly. Train a Decistion Tree again using cross-validation and report your results. Does your accuracy increase/decrease ? Why ?
7. Check to see if the data shows a bias against "foreign workers" (attribute 20),or "personal-status" (attribute 9). One way to do this (perhaps rather simple minded) is to remove these attributes from the dataset and see if the decision tree created in those cases is significantly different from the full dataset case which you have already done. To remove an attribute you can use the preprocess tab in Weka's GUI Explorer. Did removing these attributes have any significant effect? Discuss8. Another question might be, do you really need to input so many attributes to get good results? Maybe only a few would do. For example, you could try just having attributes 2, 3, 5, 7, 10, 17 (and 21, the class attribute (naturally)). Try out some combinations. (You had removed two attributes in problem
8. Remember to reload the arff data file to get all the attributes initially before you start selecting the ones you want.)
9. Sometimes, the cost of rejecting an applicant who actually has a good credit (case 1) might be higher than accepting an applicant who has bad credit (case 2). Instead of counting the misclassifcations equally in both cases, give a higher cost to the first case (say cost 5) and lower cost to the second case. You can do this by using a cost matrix in Weka. Train your Decision Tree again and report the Decision Tree and cross-validation results. Are they significantly different from results obtained in problem 6 (using equal cost)?
10. Do you think it is a good idea to prefer simple decision trees instead of having long complex decision trees ? How does the complexity of a Decision Tree relate to the bias of the model ?

11. You can make your Decision Trees simpler by pruning the nodes. One approach is to use Reduced Error Pruning - Explain this idea briefly. Try reduced error pruning for training your Decision Trees using cross-validation (you can do this in Weka) and report the Decision Tree you obtain? Also, report your accuracy using the pruned model. Does your accuracy increase?

12. (Extra Credit): How can you convert a Decision Trees into "if-then-else rules". Make up your own small Decision Tree consisting of 2-3 levels and convert it into a set of rules. There also exist different classifiers that output the model in the form of rules - one such classifier in Weka is rules.PART, train this model and report the set of rules obtained. Sometimes just one attribute can be good enough in making the decision, yes, just one ! Can you predict what attribute that might be in this dataset ? OneR classifier uses a single attribute to make decisions (it chooses the attribute based on minimum error). Report the rule obtained by training a one R classifier. Rank the performance of j48, PART and oneR.

    a. Mentor lecture on Decision Trees
    b. Andrew Moore's Data Mining Tutorials (See tutorials on Decision Trees and Cross Validation)
    c. Decision Trees (Source: Tan, MSU)
    d. Tom Mitchell's book slides (See slides on Concept Learning and Decision Trees)
    e. Weka resources:
        i. Introduction to Weka (html version) (download ppt version)
        ii. Download Weka
        iii. Weka Tutorial
        iv. ARFF format
        v. Using Weka from command line

Task 2
Hospital Management System
Data Warehouse Consists Dimension Table and Fact Table.
REMEMBER The following

Dimension
The dimension object (Dimension):
_ Name
_ Attributes (Levels) , with one primary key
_ Hierarchies
One time dimension is must.

About Levels and Hierarchies Dimension objects (dimension) consist of a set of levels and a set of hierarchies defined over those levels. The levels represent levels of aggregation. Hierarchies describe parent-child relationships among a set of levels.

For example, a typical calendar dimension could contain five levels. Two hierarchies can be defined on these levels:
H1: YearL > QuarterL > MonthL > WeekL > DayL
H2: YearL > WeekL > DayL
The hierarchies are described from parent to child, so that Year is the parent of Quarter, Quarter the parent of Month, and so forth.

About Unique Key Constraints
When you create a definition for a hierarchy, Warehouse Builder creates an identifier key for each level of the hierarchy and a unique key constraint on the lowest level (Base Level)

Design a Hospital Management system data warehouse (TARGET) consists of Dimensions Patient, Medicine, Supplier, Time. Where measures are ' NO UNITS', UNIT PRICE.

Assume the Relational database (SOURCE) table schemas as follows

TIME (day, month, year),

PATIENT (patient_name, Age, Address, etc.,)

MEDICINE (Medicine_Brand_name, Drug_name, Supplier, no_units, Uinit_Price, etc.,)

SUPPLIER :(Supplier_name, Medicine_Brand_name, Address, etc.,)

If each Dimension has 6 levels, decide the levels and hierarchies, Assume the level names suitably.

Design the Hospital Management system data warehouse using all schemas. Give the example 4-D cube with assumption names.

REFERENCE BOOKS:

1. Jiawei Han and Micheline Kamber, "Data Mining – Concepts and Techniques", Morgan Kaufmann Publishers, 2nd Edition, 2006,ISBN:10:0123814790

2. Sam Aanhory and Dennis Murray, "Data Warehousing in the Real World", Pearson Edn Asia,ISBN:8131704599

WEB LINKS:

1. http://nptel.iitm.ac.in

2. books.google.co.in › Computers › Database Management › General

(13CS429) SOFTWARE TESTING

Program: B.Tech   Lecture   : 3/Week
Year: IV   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the basic concepts of Testing.
2. To know the different phases of Domain Testing.
3. To acquire the skills on Logical Testing.
4. To understand the components of Transition Testing.
5. To understand the Software validity through open source Testing Tools .
6. To acquire the knowledge on the performance of the system.

COURSE OUTCOMES:
The students will be able to
1. Apply, analyze flow graphs, path tests, trasaction flow, domain testing to model a suitable testing methodology.
2. Have an exposure to s/w testing tools.
3. Develop efficient performance test cases for different applications
4. Accomplish the knowledge about logical and transcation testing, apply and design test models

UNIT – I
Introduction: Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs.

Flow graphs and Path testing: Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.

UNIT - II
Transaction Flow Testing: Transaction flows, transaction flow testing techniques.

Dataflow testing: Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

Domain Testing: Domains and paths, Nice and ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and testability.

UNIT - III
Paths, Path Products and Regular Expressions: Path products and path expression, reduction procedure, applications, regular expressions and flow anomaly detection.

Logic Based Testing: Overview, decision tables, path expressions, kv charts, specifications.

UNIT - IV
State, State Graphs and Transition Testing: State graphs, good and bad state graphs, state testing, Testability tips.

UNIT - V
Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools.

Usage of JMeter and Winrunner tools for functional / Regression testing, creation of test script for unattended testing, synchronization of test case, Rapid testing, Performance testing of a data base application and HTTP connection for website access.

TEXT BOOKS:
1. Baris Beizer, "Software Testing techniques", Dreamtech, second Edition, ISBN:1850328803
2. R.K.V.K.K.Prasad, "Software Testing Tools", Dreamtech, ISBN:8177225324

REFERENCE BOOKS:
1. Brian Marick,"The craft of software testing", Pearson Education, ISBN: 978013177411
2. Perry, "Effective methods of Software Testing", John Wiley, ISBN:13: 9780764598371

WEB LINKS:
1. www.dreamtechpress.com/authors.aspx
2. http://www.dl4all.com/oft/tag/Software Testing techniques Baris Beizer Dreamtech, 2nd Edition.html

(13CS430) ARTIFICIAL INTELLIGENCE

Program: B.Tech   Lecture   : 3/Week
Year: IV   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand about Intelligence and the Problem State space search.
2. To learn the different Problem State Space Techniques
3. To acquire knowledge on Issues related to Knowledge and its representation
4. To understand the monotonic and non monotonic situations.
5. To learn about the fundamentals of Expert Systems.
6. To acquire the knowledge on reasoning in uncertain situations for solving a problem.

COURSE OUTCOMES:
The students will be able to
1. Apply the problem space, knoeledge to design an effective production system.
2. Enhance the knowledge representation and can design logic by applying knowledge rules.
3. Apply, analyze, design and evaluate the expert systems.
4. Apply reasoning to construct traceble and non traceable problems.

UNIT - I
Introduction to Artificial Intelligence: The AI problem domains, the underlying assumption, An AI technique, the level of the model, Criteria for success.

Problems, Problem Spaces and Search: Defining the problem as a state space search, Production systems, Problem characteristics, Production system characteristics, Issues in the design of search programs, Additional problems.

Heuristic Search Techniques: Generate-and-Test, Hill climbing, Best-first-search, Problem reduction, Constraint satisfaction, Means-Ends Analysis.

UNIT - II
Knowledge Representation Issues: Knowledge representations and mappings, Approaches to knowledge representation, Issues in knowledge representation, The Frame problem.

Using Predicate Logic: Representing simple facts in logic, Representing Instance and Is-a-relationships, Computable functions and Predicates, Resolution, Natural Deduction.

Representing Knowledge Using Rules: Procedural versus Declarative knowledge, Forward versus Backward Reasoning.

UNIT - III
Weak slot and filler structures: Semantic nets, Frames.

Strong slot and filler structures: Conceptual Dependencies, Scripts, CYC.

Game Playing: The Minimax Search procedure, Adding Alpha-Beta Cutoffs, Additional Refinements, Iterative Deepening.

Vision: Introduction, Defining the Problem, Overview of the Solution, Early Processing, Representing and Recognizing Scenes.

UNIT - IV
Reasoning In Uncertain Situations: Introduction to Nonmonotonic Reasoning, Logic-Based Abductive Inference, Abduction - Alternative to Logic.

Understanding Natural Language: Role of Knowledge in Language Understanding, Deconstructing Language - A Symbolic Analysis, Syntax, Syntax and Knowledge with ATN Parsers, Natural Language Applications.

UNIT - V
Strong Method Problem Solving
Overview of Expert System Technology, Rule-Based Expert Systems, Model-Based, Case Based and Hybrid Systems, Planning.

TEXT BOOKS:
1. Elaine rich and Kevin knight, "Artificial Intelligence", 2nd Edition, Tata McGraw-Hill, ISBN No: 0-07-460081-8, 2002.
2. George F Luger, "Artificial Intelligence", Fourth Edition, Pearson Education Asia., ISBN No: 81-7808-491-0, 2003.

REFERENCE BOOKS:
1. Eugene Charniak and Drew Mc Dermott, "Introduction to Artificial Intelligence", Third Indian reprint 2000, Pearson Education, ISBN No: 81-7808-033-8, 2000.
2. Dan W. Patterson, "Introduction to Artificial Intelligence and Expert Systems", Prentice Hall of India, ISBN No: 81-203-0777-1, 2000.

WEB LINKS:
1. http://nptel.iitm.ac.in
2. library.macfast.org/downloads/catalogue.pdf

(13CS431A) ADHOC AND SENSOR NETWORKS
(Elective-III)

Program: B.Tech   Lecture : 3/Week
Year: IV   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the fundamentals of ADHOC Networks.
2. To know the Transport Protocols of ADHOC and sensor Networks
3. To understand the Wireless Sensor Networks.
4. To understand the communication protocols of wireless system.
5. To know about the QoS of ADHOC Networks.
6. To learn about the design issues of wireless sensor networks.

COURSE OUTCOMES:
The students will be able to
1. Apply the basic fundamentals to design ADHOC wireless system.
2. Develop and design security protocols of ADHOC wireless network.
3. Model an architecture for wireless sensor networks
4. Model and design WSNS and QoS of wireless sensor networking systems.

UNIT - I
Ad Hoc Wireless: Introduction, Mobile Ad Hoc Networks, Technologies for Ad Hoc Network, Issues in Ad hoc wireless Networks, IEEE 802.11 Architecture and protocols. Protocol for AD HOC Wireless Networks Issues and classification of MAC protocol, other MAC protocols, Dynamic Source Routing (DBR), Adhoc Distance Vector (AoDV) routing, Routing Protocols, Multicasting Routing issues

UNIT –II
Transport layer and Security protocols Issues in designing transport layer protocols, TCP over Ad Hoc Wireless Networks, Network Security Attacks, and Key management.

UNIT - III
Wire Sensor Networks Basic Sensor Network Architectural Elements, Applications of Sensor Networks, Comparison with Ad Hoc Wireless Networks, Challenges and Hurdles. Architecture of WSNs Hardware components, Operating systems and execution environments, some examples of sensor nodes, Network Architecture, Sensor networks scenarios, Optimization goals and figures of merit, Design principles for WSNs.

UNIT –IV
Communication Protocols Physical Layer and Transceiver design considerations in WSNs, Fundamentals of (wireless) MAC protocol, Address and name management in wireless sensor networks, Localization and positioning

UNIT –V
Routing protocols Data Dissemination and Gathering, Routing Challenges and Design Issues in Wireless. Routing Strategies in Wireless Sensor Networks, QoS in wireless sensor networks, Coverage and deployment.

TEXT BOOKS:
1. C Siva Ram Murty and BS Manoj, "Ad HOC Wireless Networks: Architectures and Protocols ", 2nd Ed, Pearson Education,ISBN:8131706885
2. Adleshein and Gupta, "Fundamentals of Mobile and Pervasive Computing", TMH, 2005, ISBN:978-0-7645-4887-1

REFERENCE BOOKS:
1. Mohamed Illayas, "Handbook of Ad Hoc wireless network", CRC press,ISBN:0-8493-1332-5
2. Holger Karl, "Protocols and Architectures for Wireless Sensor Networks", John Wiley and Sons, ISBN:0470519231
3. Kazem Sohraby, Daniel Minoli, Taieb Znati, "Wireless Sensor Networks Technology, Protocols, and applications", John Wiley and Sons,ISBN:978-0-471-74300-2

WEB LINKS:
1. http://nptel.iitm.ac.in
2. www.pearsonhighered.com › ... › Wireless Communications

(13CS431B) SEMANTIC WEB AND SOCIAL NETWORKS
(Elective-III)

Program: B.Tech   Lecture : 3/Week
Year: IV   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the components of Semantic Web
2. To acquire the skills on representing a knowledge for Semantic web.
3. To understand the Semantic Web Services
4. To know the different Semantic Web Tools.
5. To learn the methods for ontology development.
6. To understand the impact of semantic web on social networks.

COURSE OUTCOMES:
The students will be able to
1. Apply Ontology, intelegence, knowledge to develop semantic web.
2. Rule languages to design and develop SWRL.
3. Accomplish the semantic web s/w tools.
4.   Develop the models for social networks.

UNIT – I
The Future of the Internet: Introduction, The Syntactic Web, The Semantic Web, How the Semantic Web Will Work.

Ontology in Computer Science: Defining the Term Ontology, Differences Among Taxonomies, Thesauri, and Ontologies, Classifying Ontologies, Web Ontologies, Web Ontology Description Languages, Ontology, Categories, and Intelligence.

UNIT - II
Knowledge Representation in Description Logic: Introduction, An Informal Example, The Family of Attributive Languages, Inference Problems. RDF and RDF Schema: Introduction, XML Essentials, RDF, RDF Schema, A Summary of the RDF/RDF Schema Vocabulary. OWL: Introduction, Requirements for Web Ontology Description Languages, Header Information, Versioning, and Annotation Properties, Properties, Classes, Individuals, Data types, A Summary of the OWL Vocabulary.

UNIT - III
Rule Languages: Introduction, Usage Scenarios for Rule Languages, Datalog, RuleML, SWRL, TRIPLE. Semantic Web Services: Introduction, Web Service Essentials, OWL-S Service Ontology, an OWL-S Example

UNIT - IV
Methods for Ontology Development: Introduction, Uschold and King Ontology Development Method, Toronto Virtual Enterprise Method, Methontology, KACTUS Project Ontology Development Method, Lexicon-Based Ontology Development Method, Simplified Methods.

Ontology Sources: Introduction, Metadata, Upper Ontologies, Other Ontologic of Interest, Ontology Libraries.

UNIT - V
Semantic Web Software Tools: Introduction, Metadata and Ontology Editors, Reasoners, Other tools. Software Agents: Introduction, Agent Forms, Agent Architecture, Agents in the Semantic web Context. Semantic Desktop: Introduction, Semantic Desktop Metadata, Semantic Desktop Ontologies, Semantic Desktop Architecture, Semantic Desktop Related Applications. Ontology Application in Art: Introduction, Ontologies for the Description of Works of Art, Metadata Schemas for The Description of Works of Art, Semantic Annotation of Art Images.

TEXT BOOKS:
1. Karin K. Breitman, Marco Antonio Casanova and Walter Truszowski, "Semantic Web-Concepts, Technologies and applications", Springer.
2. Heiner Stuckenschmidt, Frank van Harmelen, "Information Sharing on the Semanting Web", Springer,ISBN:0-201-70907-4

REFERENCE BOOKS:
1. Rudi Studer, Stephan Grimm, Andrees Abeker,"Semantic Web Services: Concepts, Technologies and Applications", Springer,ISBN:978354070893335407
2. John Davis, Dieter Fensal, Frank Van Harmelen, "Towards the Semantic Web: Ontology Driven Knowledge Management", J. Wiley,ISBN:0-470-84867-7

WEB LINKS:
1. www.amazon.com › ... › Information Management
2. ebookmaterials.blogspot.com/.../semantic-web-syllabus.... - United States

(13CS431C) INFORMATION SYSTEM AND AUDITING
(Elective-III)

Program: B.Tech	Lecture : 3/Week
Year: IV	Tutorial : 1/Week
Sem: II	Practical : -
Int. Max Marks: 30	Credits : 3
Ext. Max Marks: 70	

COURSE OBJECTIVES:
1. To understand the need and importance of Information System Auditing
2. To acquire the knowledge about the Controls of Information Auditing Systems
3. To understand the Data Resource and Quality Assurance Management.
4. To learn the Input Validation and Data Controls
5. To understand the Auditing process for an information system.
6. To acquire the skills on usage of open source software tools for auditing the information system.

COURSE OUTCOMES:
The students will be able to
1. Apply the Controls to design model for Auditing
2. Apply the audit software/technics to model an automated information system Auditing.
3. Analyze the data resources and quality assurance management.
4. Have an exposure to open source auditing software tools.

UNIT – I
Overview of Information Systems Auditing: Need for Control and Audit of Computers, Effects of Computers on Internet Controls, Effects of Computers on Auditing, Foundations of Information Systems Auditing. Conducting an Information Systems Audit: The Nature of Controls, Dealing with Complexity, Audit Risks, Types of Audit Procedures, Overview of Steps in an Audit, Auditing Around or through the Computers.

UNIT - II
Top Management Controls: Evaluating the planning function. Evaluating the Organizing Function, Evaluating the Leading Function, Evaluating the Controlling Function. Systems Development Management Controls: Approaches to Auditing Systems Development, Normative Models of the Systems Development Process, Evaluating the Major Phases in the Systems Development Process.

Programming Management Controls: The Program Development Life Cycle, Organizing the Programming Team, Managing the System Programming Group.

UNIT - III
Data Resource Management Controls: Motivations toward the DA and DBA Roles, Functions of the DA and DBA, Some Organizational Issues, Data Repository Systems, Control over the DA and DBA. Security Management controls: Conducting a Security Program, Major Security threats and Remedial Measures, Controls of last Resort, Some Organizational Issues .Operations Management Controls: Computer Operations, network

Operations, Data Preparation and Entry, Production Control ,File Library, Documentation and Program Library, help Desk/Technical Support, Capacity Planning and Performance Monitoring, Management of Outsourced operations.

UNIT - IV
Input Controls: Data Input Methods, Source Document Design, Data-Entry Screen Design, Data Code Controls, Check Digits, Batch Controls, Validation of Data Input, Instruction Input, Validation of Instruction Input, Audit Trail Controls, Existence Controls. Communication controls**:** Communication Subsystem Exposures, Physical component Controls, Line Error Controls, Flow controls, Link Controls, Topological Controls, Channel Access Controls, Controls over Subversive Threats, Internetworking Controls, Communication Architectures and Controls, Audit Trail Controls Existence Controls. Processing Controls**:** Processor Controls, Real Memory Controls, Virtual Memory Controls, Operating System Integrity, Application Software Controls, Audit Trail Controls, Existence Controls and Database Controls.

UNIT - V
Audit Softwares : Generalized Audit Software, Industry-specific Audit Software, High-level Languages, Utility Software, Expert Systems, Neural Network Software, Specialized Audit Software control Audit Software. Concurrent **Auditing Techniques:** Basic Nature of Concurrent Auditing Techniques, Need for Concurrent Auditing Techniques, Types of Concurrent Auditing Techniques, Need for concurrent Auditing Techniques, Types of Concurrent Auditing Techniques, Implementing Concurrent Auditing Techniques, Strengths/Limitations of Concurrent Auditing Techniques.

TEXT BOOKS:
1. Ron Weber "Information Systems Control and Audit", Pearson Education, 2004,ISBN:978-0-470-00989-5
2. D P Dube, "Information system Audit and Assurance" ISBN 9780070585690.

RERFERENCE BOOKS:
1. Richard E. cascarino "Information systems and auditing, "John Wiley Publications, April, 2007.
2. Jack J Champlain "Auditing Information Systems" WILEY, ISBN 978-0471281177**,** 2003.

WEB LINKS:
1. books.google.com › ... › Information Management
2. ebookbrowse.com/auditors-guide-to-information-systems-auditing

(13CS431D) VLSI SYSTEM DESIGN
(Elective-III)

Program: B.Tech   Lecture : 3/Week
Year: IV   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the basic concepts of VLSI Design.
2. To understand the Structure of Integrated Circuits.
3. To understand the Components of VLSI
4. To acquire the skills on programmable Logic of VLSI
5. To learn about the Validation process of VLSI.
6. To acquire the skills on reliability and test generation methods.

COURSE OUTCOMES:
The students will be able to
1. Apply MOSFETS to design logic circuits.
2. Model the structures of CMOS for ICs.
3. Develop, design system specification of VLSI system.
4. Apply circuits in CMOS, flipflops to design VLSI system.

UNIT - I
An Overview of VLSI: Complexity and Design, Basic concepts.

Electrical properties of MOS circuits: I_D-V_D characteristics, Device parameters, V_T, G_M, figure of merit W_O, pull-up to pull-down ratio, Bipolar, n-MOS, P-MOS, C-MOS, BiCMOS processes, comparison.

Logic Design with MOSFETS: Ideal switches and Boolean Operations, MOSFETs as switches, Basic Logic Gates in CMOS, Complex Logic Gates in CMOS, Transmission Gate Circuits. Clocking and Dataflow control.

UNIT - II
Physical Structure of CMOS Integrated Circuits: Integrated Circuit layers, MOSFETs, CMOS Layers, Designing FET Arrays.

Fabrication of CMOS Integrated circuits: Overview of Silicon Processing, Material Growth and Deposition, Lithography, The CMOS Process flow, Design rules.

Elements of physical Design: Basic concepts, Layouts of Basic Structures, Cell Concepts, FET sizing and the unit Transistor, Physical Design of Logic Gates, Design hierarchies, stick diagrams, Design rules and layout- Lamda-Based Design rules, contact cuts, Double Metal MOS process Rules, CMOS Lambda-Based Design rules, Layout Diagrams, Sheet Resistance R_s and its concept applied to MOS Transistors and Inverters, Standard Unit of Capacitance Cg, Capacitance calculations, The Delay unit T.

UNIT - III
System Specifications of VLSI Systems: Basic Concepts, Structural Gate-Level Modeling, Switch-Level Modeling, Design Hierarchies, Behavioral and RTL Modeling.

General VLSI System Components: Multiplexers, Binary Decoders, Equality Detectors and Comparators, Priority Encoder, Shift and Rotation Operations, Latches, D Flip-Flop, Registers, The Role of synthesis.

UNIT - IV
Arithmetic Circuits In Cmos VLSI: Bit Adder Circuits, Ripple-carry Adder, Carry Look-Ahead Adders, Other High-Speed Adders, multipliers.

Memories and Programmable Logic: The Static RAM, SRAM Arrays, Dynamic RAMs, ROM Arrays, Logic Arrays.

System-Level Physical Design: Large-scale physical Design, Interconnect Delay Modeling, Crosstalk, Interconnect scaling, Floor planning and Routing, Power Distribution and Consumption, Low-power Design Considerations

UNIT - V
Clocking and System Desig: Clocked Flip-flops, CMOS Clocking Styles, pipelined Systems, Clock Generation and Considerations.

Reliability and Testing of VLSI Circuits: General Concepts, CMOS Testing, Test Generation Methods.

TEXT BOOKS:
1. John P.Uyemura, "Introduction to VLSI Circuits and Systems", John Wiley and Sons, ISBN No: 9971-51-417-6, 2002.
2. Wayne Wolf, "Modern VLSI DESIGN System-On-Chip Design", Third, Pearson Education, ISBNNo: 81-7808-653-0, 1997.

REFERENCE BOOKS:
1. K.Subba Rao, "VLSI Design", First Edition, Hi-Tech publishers, 2005.
2. S Ramachandran "Digital VLSI System Design-Adesign manual for implementation of projects" Springer 2007.

WEB LINKS:
1. http://nptel.iitm.ac.in
2. eu.wiley.com/WileyCDA/WileyTitle/productCd-0471127043.html

(13CS432A) ADVANCED DATABASES
(Elective- IV)

Program: B.Tech	Lecture : 3/Week
Year: IV	Tutorial : 1/Week
Sem: II	Practical : -
Int. Max Marks: 30	Credits : 3
Ext. Max Marks: 70	

COURSE OBJECTIVES:
1. To know the Structure and design issues of databases
2. To learn the Storage Strategies for easy retrieval of data through index
3. To learn the Enforcing Integrity Constraints to keep the database consistent
4. To acquire the knowledge on memory hierarchy.
5. To perform the Querying relational data, Optimizing and processing the queries and normalization to eliminate the redundancy.
6. To know the Distributed databases management system concepts and Implementation

COURSE OUTCOMES:
The students will be able to
1. Apply, analyze data models, relational algebra and integrity constraints to design database.
2. Accomplish the data manipulation using SQL.
3. Have an exposure on memory hierarchy..
4. Develop and design distributed databases.

UNIT- I
Database System Applications, Purpose of Database Systems, View of Data – Data Abstraction, Instances and Schemas, Data Models – the ER Model, Relational Model, Other Models – Database Languages – DDL,DML, Database Access from Applications Programs, Transaction Management, Data Storage and Querying, Database Architecture, Database Users and Administrators, ER diagrams,. Relational Model: Introduction to the Relational Model – Integrity Constraints Over Relations, Enforcing Integrity constraints, Querying relational data, Logical data base Design, Introduction to Views –Altering Tables and Views, Relational Algebra, Basic SQL Queries, Nested Queries, Complex Integrity Constraints in SQL, Triggers

UNIT- II
Introduction to Schema Refinement – Problems Caused by redundancy, Decompositions – Problem related to decomposition, Functional Dependencies - Reasoning about FDS, Normal Forms – FIRST, SECOND, THIRD Normal forms – BCNF –Properties of Decompositions- Loss less- join Decomposition, Dependency preserving Decomposition, Schema Refinement in Data base Design – Multi valued Dependencies – FOURTH Normal Form, Join Dependencies, FIFTH Normal form.

UNIT- III
Transaction Management: The ACID Properties, Transactions and Schedules, Concurrent Execution of Transactions – Lock Based Concurrency Control, Deadlocks – Performance of

Locking – Transaction, Support in SQL. Concurrency Control: Serializability, and recoverability – Introduction to Lock Management – Lock Conversions, Dealing with Dead Locks, Specialized Locking Techniques – Concurrency Control Without Locking. Crash recovery: Introduction to Crash recovery, Introduction to ARIES, the Log, and Other Recovery related Structures, the write-Ahead Log Protocol, Check pointing, recovering from a System Crash, Media recovery

UNIT- IV
Overview of Storage and Indexing: Data on External Storage, File Organization and Indexing – Clustered Indexes, Primary and Secondary Indexes, Index data Structures – Hash Based indexing, Tree based Indexing Storing data: Disks and Files: -The Memory Hierarchy – Redundant Arrays of Independent Disks. Tree Structured Indexing: Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM) B+ Trees: A Dynamic Index Structure, Search, Insert, Delete. Hash Based Indexing: Static Hashing, Extendable hashing, Linear Hashing, Extendable vs. Linear Hashing.

UNIT- V
Distributed databases: Introduction to distributed databases, Distributed DBMS architectures, Storing data in a distributed DBMS, Distributed catalog management, Distributed query processing Updating distributed data, Distributed transactions, Distributed concurrency control, Distributed recovery

TEXT BOOKS:
1. Raghu Ramakrishnan, Johannes Gehrke,"Data base Management Systems", TMH, 3rd Edition, 2003,ISBN:007123151X
2. Ramez Elmasri, Shamkant B.Navathe, "Fundamentals of Database Systems", 5th edition. Pearson Education, 2008,ISBN:0-321-36957-2

REFERENCE BOOKS:
1. C.J.Date, "Introduction to Database Systems" ,Pearson Education, ISBN:10:0321197844
2. 2. A.Silberschatz, H.F. Korth, S.Sudarshan," Data base System Concepts", McGraw hill, VI edition, 2006,ISBN:0073523321

(13CS432B) SOFTWARE METRICS
(Elective- IV)

Program: B.Tech   Lecture   : 3/Week
Year: IV   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the metrics and measurement of a software system
2. To learn the data analysis and visualisation of a system and the relationship among the modules
3. To acquire the knowledge on online usage of metrics
4. To learn the metrics and measurements of a defect management
5. To understand the assesment of a software system.
6. To acquire the skills on measurements and industrial leadership of a software system.

COURSE OUTCOMES:
The students will be able to
1. Evaluate software metrics.
2. Accomplish the process metrics for software product.
3. Model and design measurement mechanism for quality asserts.
4. Acquire the skills to measure software process improvement.

UNIT- I
The History and Evolution of Software Metrics: Evolution of the software industry and evolution of software measurements – The cost of counting function point metrics – The paradox of reversed productivity for high-Level languages- The Varieties of functional metrics – Variations in application size and productivity rates – Future Technical Developments in Functional Metrics- Software measures and metrics not based on function points.

UNIT- II
Measuring Software Quality: Quality control and international competition – Defining quality for measurement and estimation – Five steps to software quality control- Measuring software defect removal- Measuring Defect removal efficiency – Measuring the costs of defect removal – Evaluating defect prevention methods – Measuring customer reported defects- Measuring invalid defects, Duplicate defects and special cases- Reliability Models - The Rayleigh Model- Reliability Growth Models.

UNIT- III
Process Metrics: In-Process Metrics for Software Testing - Test Progress S Curve - Testing Defect Arrivals Over Time - Product Size Over Time - CPU Utilization - Effort/Outcome Model. Complexity Metrics and Models - Lines of Code - Halstead's Software Science - Cyclomatic Complexity. - Syntactic Constructs - Structure Metrics. Metrics for Object-

Oriented Projects - Concepts and Constructs - Design and Complexity Metrics - Lorenz Metrics and Rules of Thumb - CK OO Metrics Suite - Productivity Metrics.

UNIT- IV

Mechanics of Measurement: Software Assessments – Software Baselines – Software Benchmarks- What a Baseline analysis covers – Developing or Acquiring a baseline data collection Instrument – Administering the data collection questionnaire – Analysis and aggregation of the Baseline data. Measuring and Analyzing Customer Satisfaction - Surveys - Data Collection - Sampling Methods - Analyzing Satisfaction Data. Conducting In-Process Quality Assessments - Preparation - Evaluation - Quantitative Data - Qualitative Data - Evaluation Criteria - Overall Assessment.

UNIT -V

Measurements, Metrics and Industry Leadership: Measures and metrics of industry leaders – Measures, metrics and innovation – Measurements, metrics and outsource litigation – Measurements, metrics and behavioral changes – Commercial software measurement tools. Measuring Process Maturity - Process Capability - Value of Process Improvement - Process Adoption – Process Compliance. Function Point Metrics to Measure Software Process Improvement - Software Process Improvement Sequences.

TEXT BOOKS

1. Caper Jones, "Applied Software Measurement: Global Analysis of Productivity and Quality" , Third Edition, McGraw Hill Companies, 2008,ISBN:10:0071502440
2. Stephen H. Kan, "Metrics and Models in Software Quality Engineering", Addison Wesley, 2011,ISBN:10:0201729156

REFERENCE BOOKS

1. C. Ravindranath Pandian Software Metrics: A Guide to Planning, Analysis, and Application". CRC Press, 26-Sep-2003,ISBN:0-8493-0800-3
2. Mark Lorenz, Jeff Kidd, "Object-Oriented Software Metrics", Prentice Hall, 2000,ISBN:10:013179292X

(13CS432C) .NET PROGRAMMING
(Elective- IV)

Program: B.Tech   Lecture   : 3/Week
Year: IV   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To understand the .NET Framework and Visual Studio .NET IDE.
2. To acquire the knowledge on C# and object-oriented programming.
3. To understand the usuage of forms to develop GUI programs using .NET.
4. To learn ADO .Net features to communicate with different databases.
5. To acquire skills on developing web applications by using ASP .Net.
6. To know the knowledge of implementing web applications using web servers, services and programming.

COURSE OUTCOMES:
The students will be able to
1. Accomplish the framework and architecture of .Net programming.
2. Apply C# basics to model and design CLR.
3. Apply ADO.NET to model and design effective database systems.
4. Apply web services and servers to run web applications through web programming.

UNIT - I
.NET Architecture: .Net Framework and Languages - The Common Language Runtime (CLR) – Microsoft Intermediate Language (MSIL) – JIT Compiler - Advantages of Managed Code - framework Class Libraries (FCL), Assemblies, Namespaces – ADO .Net – ASP .Net - The Role of C# in the .NET Enterprise Architecture – Working with Visual Studio .Net: Creating a project – Solutions and Projects - .Net IDE: Folding editor, Design view window, Properties window, Class view window, Object browser window,Serverexplorer window – Building a project and debugging.

UNIT - II
C# Basics: Predefined data types: Value Types and Reference Types - Declaring variables - Initialization and scope of variables - Console I/O - Using Comments – Flow Control: onditional Statements, Loops, Jump Statements, break, continue, and return statements - Operators in C #.

Objects and Types: Classes and Structs - Class Members - Methods – Constructors – Properties - The Object Class – Inheritance: Types of Inheritance - Abstract Classes and Functions - Sealed Classes and Methods – Interfaces - Defining and Implementing Interfaces – Strings: methods of System.String - Errors and Exceptions: Exception Classes – Catching exceptions – User defined exception classes.

UNIT - III

Windows Forms: Standard Controls and Components: Button, Textbox, Rich textbox, Button, Label, Combo box, List box, Check box, Radio button, Date time picker, Image list, List view, panel, Picture box, Progress bar, Status bar, Tab control and tab pages, Menu, Tool bar, Form class, Multiple Document Interface (MDI), User control – Deployment: Deployment options, Installer Projects.

UNIT - IV

Data Access with .NET: ADO.NET Overview – Namespaces – Shared classes - Database-specific Classes - Using Database Connections – Commands – Executing commands - Fast Data Access: The Data Reader - Managing Data and Relationships: The DataSet Class – DataTables – DataColumns – DataRows - Populating a DataSet: Populating a DataSet Class with a Data Adapter - Updating with Data Adapters - The DataGrid Control – Data binding.

UNIT - V

Web Programming: ASP.NET Introduction - ASP.NET Web Forms - ASP.NET Server Controls - Validation controls – Using ADO .Net in ASP .Net - Web Services - Exposing Web Services – User Controls – Custom controls.

TEXT BOOKS:

1. Simon Robinson, Christian Nagel, Jay Jay Glynn, Morgan Skinner, Karli Watson, Bill Evjen "Professional C#" - Third Edition – Wrox, Wiley Publishing, Inc,ISBN:978-0-7645-5759-0
2. E. Balagurusamy, "Programming in C#" –5th Reprint, Tata McGraw Hill, 2004. ISBN:1259004619

REFERENCES:

1. Andrew Troelsen, "Pro C# with .NET 3.0 "–Special Edition, Dreamtech Press, India, 2007, ISBN:8181286820
2. Herbert Schildt, "C#: The Complete Reference" –Tata McGraw Hill, 2004. ISBN:10:0072262095

(13CS432D) EMBEDDED SYSTEM DESIGN
(Elective- IV)

Program: B.Tech   Lecture : 3/Week
Year: IV   Tutorial : 1/Week
Sem: II   Practical : -
Int. Max Marks: 30   Credits   : 3
Ext. Max Marks: 70

COURSE OBJECTIVES:
1. To acquire the skills on building blocks of embedded systems.
2. To learn embedded software and its implementation.
3. To understand of the phases of embedded system and debugging tools.
4. To acquire design skills for embedded systems.
5. To acquire skills on designing embedded software using real time operating system.
6. To understand the basic working principles of networked embedded systems.

COURSE OUTCOMES:
The students will be able to
1. Apply, design the architecture for 8051 .
2. Apply assembly language concepts for designing the embedded systems like diplays, RTOs.
3. Analyze the ARM, RISC processor to model Internet enabled systems and controllers.
4. Have an exposure to build network embedded systems.

UNIT – I
Embedded Computing: Introduction, Complex Systems and Microprocessor, the Embedded System Design Process, Formalisms for System Design, Design Examples.

 The 8051 Architecture: Introduction, 8051 Micro controller Hardware, Input/Output Ports and Circuits, External Memory, Counter and Timers, Serial data Input/Output, Interrupts.

UNIT – II
Basic Assembly Language Programming Concepts: The Assembly Language Programming Process, Programming Tools and Techniques, Programming the 8051. Data Transfer and Logical Instructions. Arithmetic Operations, Decimal Arithmetic. Jump and Call Instructions, Further Details on Interrupts.

UNIT – III
Applications: Interfacing with Keyboards, Displays, D/A and A/D Conversions, Multiple Interrupts, Serial Data Communication. Introduction to Real – Time Operating Systems: Tasks and Task States, Tasks and Data, Semaphores, and Shared Data; Message Queues, Mailboxes and Pipes, Timer Functions, Events, Memory Management.

UNIT – IV
Basic Design Using a Real-Time Operating System: Principles, Semaphores and Queues, Hard Real-Time Scheduling Considerations, Saving Memory and Power, An example RTOS like uC-OS (Open Source); Embedded Software Development Tools: Host and Target

machines, Linker/Locators for Embedded Software, Getting Embedded Software into the Target System; Debugging Techniques: Testing on Host Machine, Using Laboratory Tools, An Example System.

UNIT – V
Introduction to Advanced Architectures: ARM and SHARC, Processor and memory organization and Instruction level parallelism; Networked embedded systems: Bus protocols, I2C bus and CAN bus; Internet-Enabled Systems, Design Example-Elevator Controller.

TEXT BOOKS:
1. Wayne Wolf, "Computers as Components-principles of embedded computer system design", Elseveir,ISBN:10:0123884365
2. Raj Kamal,"Embedded Systems", TMH,ISBN:0070494703

REFERENCE BOOKS:
1. Frank Vahid, Tony Givargis,"Embedded System Design", John Wiley, ISBN: 0471386782
2. Labrosse "Embedding system building blocks", CMP Publishers,ISBN:0-87930-604-1

WEB LINKS:
1. books.google.com › ... › Hardware › Personal Computers › PCs
2. ebookfreetoday.com/Wayne-Wolf,- Computers-as-Components