2013-2014

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR COLLEGE OF ENGINEERING ANANTAPUR (Autonomous)

Computer Science and Engineering

Course Structure for B.Tech (Computer Science and Engineering)
(2013-14)

I B.Tech (CSE) – I Sem

S. No.		Subject	L	T	P	Credits
1	BS	Mathematics- I	3	1	0	3
2	ES	Environmental Studies	3	1	0	3
3	HS	Technical English	3	1	0	3
4	ES	Engineering Graphics	2	0	2	3
5	BS	Applied Physics	3	1	0	3
6	BS	Applied Physics Lab	0	0	3	2
7	HS	English Language Communication Skills Lab	0	0	3	2
8	ES	Engineering Workshop & IT Workshop	0	0	3	2
		Total	**14**	**4**	**11**	**21**

I B.Tech (CSE) – II Sem

S. No.		Subject	L	T	P	Credits
1	BS	Mathematics – II	3	1	0	3
2	BS	Mathematical Methods	3	1	0	3
3	ES	Basic Electrical Engineering	3	1	0	3
4	BS	Engineering Chemistry	3	1	0	3
5	HS	Technical Communication and Presentation Skills	3	1	0	3
6	ES	Computer Programming	3	1	0	3
7	BS	Engineering Chemistry Lab	0	0	3	2
8	ES	Computer Programming Lab	0	0	3	2
		Total	**18**	**6**	**6**	**22**

2013-2014

II B.Tech (CSE) – I Sem

S. No		Subject	L	T	P	Credits
1	HS	Managerial Economics and Financial Analysis	3	1	0	3
2	BS	Probability and Statistics	3	1	0	3
3	ES	Electronic Devices & Circuits	3	1	0	3
4	PC	Data Structures	3	1	0	3
5	ES	Digital Logic Design	3	1	0	3
6	BS	Discrete Mathematics	3	1	0	3
7	ES	Basic Electrical &Electronics Lab	0	0	3	2
8	PC	Data Structures Lab	0	0	3	2
		Total	**18**	**6**	**6**	**22**

II B.Tech (CSE) – II Sem

S. No		Subject	L	T	P	Credits
1	PC	Computer Organization	3	1	0	3
2	PC	Database Management Systems	3	1	0	3
3	PC	Java Programming	3	1	0	3
4	PC	Formal Languages and Automata Theory	3	1	0	3
5	PC	Principles of Programming Languages	3	1	0	3
6	PC	Design and Analysis of Algorithms	3	1	0	3
7		Human Values and Professional Ethics (Audit Course)	2	-	-	-
8	PC	Database Management Systems Lab	0	0	3	2
9	PC	Java Programming Lab	0	0	3	2
		Total	**20**	**6**	**6**	**22**

2013-2014

III B.Tech (CSE) – I Sem

Sl. No	Course Code	Subject	L	T	P	Credits
1	PC	Operating Systems	3	1	0	3
2	PC	Compiler Design	3	1	0	3
3	PC	Unix and Shell Programming	3	1	0	3
4	PC	Software Engineering	3	1	0	3
5	ES	Microprocessors & Interfacing	3	1	0	3
6	PC	Advanced Computer Architecture	3	1	0	3
7	PC	Operating Systems and Shell Programming Lab	0	0	3	2
8	PC	Compiler Design and Assembly Language Programming Lab	0	0	3	2
		Total	**18**	**6**	**6**	**22**

III B.Tech (CSE) – II Sem

Sl. No	Course Code	Subject	L	T	P	Credits
1	PC	Computer Networks	3	1	0	3
2	PC	Object Oriented Analysis and Design Using UML	3	1	0	3
3	PC	Data Mining	3	1	0	3
4	PC	Internet Technologies	3	1	0	3
5	PC	Software Testing	3	1	0	3
6	PC	Data Analytics - I	3	1	0	3
7		Advanced English Language Communication Skills Lab (Compulsory Audit Course)	2	-	-	-
8	PC	Object Oriented Analysis and Design and Software Testing Lab	0	0	3	2
9	PC	Internet Technologies and Data Mining Lab	0	0	3	2
		Total	**20**	**6**	**6**	**22**

2013-2014

Course Structure for B.Tech (Computer Science and Engineering) (2013-14)

IV B.Tech (CSE) – I Sem

Sl. No	Course Code	Subject	L	T	P	Credits
1	PC	Software Architecture	3	1	0	3
2	PC	Cryptography and Network Security	3	1	0	3
3	PC	Mobile Application Development	3	1	0	3
4	PC	Cloud Computing	3	1	0	3
5	OE	**Open Elective/ CBCS (Annexure-I)**	3	1	0	3
6	PE	**Elective-I (MOOCs) (Annexure-II**)	3	1	0	3
7	PC	Security and Cloud Computing Lab	0	0	3	2
8	PC	Mobile Application Development Lab	0	0	3	2
9		Project Part-A - Seminar	-	-	-	2
		Total	**18**	**6**	**6**	**24**

IV B.Tech (CSE)– II Sem

Sl. No	Course Code	Subject	L	T	P	Credits
1	HS	Management Science	3	1		3
2	PC	Design Patterns	3	1		3
3	PE	**Elective-II** a. Mobile Computing b. Software Project Management c. Pattern Recognition d. Computer Graphics and Multimedia	3	1		3
4	PE	**Elective-III** a. Optimization Techniques b. Embedded Systems c. Natural Language Processing d. Data Analytics - III	3	1		3
5		Comprehensive Viva-Voce	-	-	-	3
6		Project Part-B	-	-	-	10
		Total	**12**	**4**		**25**

***BS** – Basic Sciences ***ES** – Engineering Science ***HS** – Humanities and Social Science
***PC** – Professional Subject –Core ***PE** – Professional Subject –Elective ***MC**- Mandatory Course
***OE**- Open Elective, **MOOCs** – Massive Open Online Course

Open Elective/ CBCS
(Annexure-I)

1. Data Analytics - II
2. Artificial Intelligence
3. Introduction to Machine Learning
4. Software Process Management
5. Artificial Neural Networks
6. Service Oriented Architecture

Elective-I (MOOCs)
(Annexure-II)

1. Introduction to Big Data by Harward Univ via edx
2. Scalable Machine Learning by California Univ via edx
3. Human Computer Interaction by California Univ via corsevera
4. Visual Design by Harward Univ via edx
5. Big Data Analytics by IIT Madras, Chennai
6. Computer Maintenances
7. Web Performance Optimization
8. Introduction to Hadoop and Mapreduce
9. Introduction to Reverse Engineering Software

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I Year B.Tech (Common to all Branches) - I Semester

T	L	C
3+1*	0	3

MATHEMATICS – I

(Common to All Branches)

Objectives

- To train the students thoroughly in Mathematical concepts of ordinary differential equations and their applications in electrical circuits, deflection of beams, whirling of shafts.
- To prepare students for lifelong learning and successful careers using mathematical concepts of differential and Integral calculus, ordinary and partial differential equations.
- To develop the skill pertinent to the practice of the mathematical concepts including the students abilities to formulate the problems, to think creatively and to synthesize information.

UNIT – I

Exact, linear and Bernoulli equations. Applications to Newton's law of cooling, law of natural growth and decay, orthogonal trajectories.

Non-homogeneous linear differential equations of second and higher order with constant coefficients with RHS term of the type e^{ax}, sin ax, cos ax, polynomials in x, e^{ax} V(x), xV(x), method of variation of parameters. Applications to oscillatory electrical circuits, Deflection of Beams, whirling of shafts.

UNIT – II

Taylor's and Maclaurin's Series - Functions of several variables – Jacobian – Maxima and Minima of functions of two variables, Lagrange's method of undetermined Multipliers with three variables only. Radius of curvature, center of curvature, Involutes, evolutes and envelopes..

UNIT – III

Curve tracing – Cartesian, polar and parametric curves. Length of curves.

UNIT – IV

Multiple integral – Double and triple integrals – Change of Variables – Change of order of integration. Applications to areas and volumes, surface area of solid of revolution in Cartesian and polar coordinates using double integral.

UNIT – V

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions – Method of separation of variables – Solutions of one dimensional wave equation, heat equation and two-dimensional Laplace's equation under initial and boundary conditions.

TEXT BOOKS:

1. Higher Engineering Mathematics, B.S.Grewal, Khanna publishers.
2. Engineering Mathematics, Volume - I, E. Rukmangadachari & E. Keshava Reddy, Pearson Publisher.

REFERENCES:

1. Engineering Mathematics Volume-I, by T.K.V. Iyengar, B.Krishna Gandhi, S.Ranganatham and M.V.S.S.N.Prasad, S.Chand publication.
2. Engineering Mathematics, Volume - I, by G.S.S.Raju, CENGAGE publisher.

3. Advanced Engineering Mathematics, by Erwin Kreyszig, Wiley India.
4. Higher Engineering Mathematics, by B.V.Ramana, Mc Graw Hill publishers.
5. Advanced Engineering Mathematics, by Alan Jeffrey, Elsevier.

Outcomes:

- The students become familiar with the application of differential and integral calculus, ordinary and partial differential equations to engineering problems.
- The students attain the abilities to use mathematical knowledge to analyze and solve problems in engineering applications.

JNTUA College Of Engineering (Autonomous):: Anantapuramu
Department of Computer Science & Engineering

I Year B.Tech (Common to all Branches) I Semester

T	L	C
3+1*	0	3

ENVIRONMENTAL STUDIES

OBJECTIVE: *To make the students to get awareness on environment, to understand the importance of protecting natural resources, ecosystems for future generations and pollution causes due to the day to day activities of human life to save earth from the inventions by the engineers.*

UNIT – I

MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES: – Definition, Scope and Importance – Need for Public Awareness.

NATURAL RESOURCES : Renewable and non-renewable resources – Natural resources and associated problems – Forest resources – Use and over – exploitation, deforestation, case studies – Timber extraction – Mining, dams and other effects on forest and tribal people – Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. – Energy resources:

UNIT – II

ECOSYSTEMS : Concept of an ecosystem. – Structure and function of an ecosystem – Producers, consumers and decomposers – Energy flow in the ecosystem – Ecological sucession – Food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the following ecosystem:

a. Forest ecosystem.
b. Grassland ecosystem
c. Desert ecosystem
d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

BIODIVERSITY AND ITS CONSERVATION : Introduction 0 Definition: genetic, species and ecosystem diversity – Bio-geographical classification of India – Value of biodiversity: consumptive use, Productive use, social, ethical, aesthetic and option values – Biodiversity at global, National and local levels – India as a mega-diversity nation – Hot-soports of biodiversity – Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – Endangered and endemic species of India – Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT – III

ENVIRONMENTAL POLLUTION : Definition, Cause, effects and control measures of :

a. Air Pollution.
b. Water pollution
c. Soil pollution

d. Marine pollution
e. Noise pollution
f. Thermal pollution
g. Nuclear hazards

SOLID WASTE MANAGEMENT : Causes**,** effects and control measures of urban and industrial wates – Role of an individual in prevention of pollution – Pollution case studies – Disaster management: floods, earthquake, cyclone and landslides.

UNIT – IV

SOCIAL ISSUES AND THE ENVIRONMENT : From Unsustainable to Sustainable development – Urban problems related to energy – Water conservation, rain water harvesting, watershed management – Resettlement and rehabilitation of people; its problems and concerns. Case studies – Environmental ethics: Issues and possible solutions – Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies – Wasteland reclamation. – Consumerism and waste products. – Environment Protection Act. – Air (Prevention and Control of Pollution) Act. – Water (Prevention and control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness.

UNIT – V

HUMAN POPULATION AND THE ENVIRONMENT : Population growth, variation among nations. Population explosion – Family Welfare Proggramme. – Environment and human health – Human Rights – Value Education – HIV/AIDS – Women and Child Welfare – Role of information Technology in Environment and human health – Case studies.

FIELD WORK : Visit to a local area to document environmental assets River/forest grassland/hill/mountain – Visit to a local polluted site-Urban/Rural/Industrial/Agricultural Study of common plants, insects, birds – river, hill slopes, etc..

Text books :

(1) Text book of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission, Universities Press.
(2) Environmental Studies by Palaniswamy – Pearson education
(3) Environmental Studies by R.Rajagopalan, Oxford University Press.

References :

(1) Textbook of Environmental Science by Deeksha Dave and E.Sai Baba Reddy, Cengage Pubilications.
(2) Text book of Environmental Sciences and Technology by M.Anji Reddy, BS Publication.
(3) Comprehensive Environmental studies by J.P.Sharma, Laxmi publications.
(4) Environmental sciences and engineering – J. Glynn Henry and Gary W. Heinke – Printice hall of India Private limited.
(5) Introduction to Environmental engineering and science by Gilbert M. Masters and Wendell P. Ela - Printice hall of India Private limited.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I Year B.Tech (Common to all Branches) - I Semester **T L C**

3+1* 0 3

TECHNICAL ENGLISH

1. INTRODUCTION:

English is an international language as well as a living and vibrant one. People have found that knowledge of English is a passport for better career, better pay, advanced knowledge and for communication with the entire world. As it is a language of opportunities in this global age, English is bound to expand its domain of use everywhere. The syllabus has been designed to enhance communication skills of the students of engineering and technology. The prescribed books serve the purpose of preparing them for everyday communication and to face the global competitions in future.

The first text prescribed for detailed study focuses on LSRW skills and vocabulary development. The teachers should encourage the students to use the target language. The classes should be interactive and student-centered. They should be encouraged to participate in the classroom activities keenly.

The text for non-detailed study is meant for extensive reading/reading for pleasure by the students. They may be encouraged to read some select topics on their own, which could lead into a classroom discussion. In addition to the exercises from the texts done in the class, the teacher can bring variety by using authentic materials such as newspaper articles, advertisements, promotional material etc.

2. OBJECTIVES:

1. To enable the students to communicate in English for academic and social purpose
2. To enable the students to acquire structure and written expressions required for their profession.
3. To develop the listening skills of the students
4. To inculcate the habit of reading for pleasure
5. To enhance the study skills of the students with emphasis on LSRW skills

3. SYLLABUS:

UNIT –I

Chapter entitled *Humour* from "Using English"

Chapter entitled '*Homi Jehangir Bhabha'* from "New Horizons"

L- Listening -Techniques - Importance of phonetics
L- Meet & Greet and Leave taking, Introducing Oneself and Others (Formal and Informal situations)
R- -Reading Strategies -Skimming and Scanning
W- Writing strategies- sentence structures
G-Parts of Speech –Noun-number, pronoun-personal pronoun, verb- analysis
V-Affixes-prefix and suffix, root words, derivatives

UNIT –II

Chapter entitled *Inspiration* from "Using English"

Chapter entitled 'My Struggle for an Education' from "New Horizons"

L- Listening to details
S- Apologizing, Interrupting, Requesting and Making polite conversations
R-note making strategies
W- Paragraph-types- topic sentences, unity, coherence, length , linking devices
G-Auxiliary verbs and question tags
V- synonyms-antonyms, homonyms , homophones, homographs, words often confused

UNIT –III

Chapter entitled *Sustainable Development* from "Using English"
Chapter entitled 'The Autobiography of Abraham Lincoln' from "New Horizons"

L- Listening to themes and note taking
S- Giving instructions and Directions, making suggestions, Accepting ideas, fixing a time and Advising
R- Reading for details -1
W- Resume and cover letter
G- Tenses – Present tense, Past tense and Future tense
V-Word formation and One-Word Substitutes

UNIT –IV

Chapter entitled *Relationships* from "Using English"

Chapter entitled ' T*he Happy Prince* from "New Horizons"

L- Listening to news
S- Narrating stories, Expressing ideas and opinions and telephone skills
R- Reading for specific details and Information
W- Technical Report writing-strategies, formats-types-technical report writing
G- Voice and Subject – Verb Agreement
V- Idioms and prepositional Phrases

UNIT –V

Chapter entitled Science and Humanism from "Using English"
Chapter entitled 'If'from "New Horizons"
L- Listening to speeches
S- Making Presentations and Group Discussions
R- Reading for Information
W- E-mail drafting
G- Conditional clauses and conjunctions
V- Collocations and Technical Vocabulary and using words appropriately

4.EXPECTED OUTCOME:

The students will get the required training in LSRW skills through the prescribed texts and develop communicative competence

Prescribed Books:

1. **Using English (for detailed study)** published by Orient Black Swan, 2013
2. **New Horizons** published by Pearson, 2013

Suggested Reading:

1. **Raymond Murphy's English Grammar with CD,** Murphy, Cambridge University Press, 2012.
2. **English Conversation Practice –**Grant Taylor, Tata McGraw Hill, 2009.
3. **Communication Skills, Sanjay Kumar & Pushpalatha** Oxford University Press, 2012.
4. **A Course in Communication Skills**- Kiranmai Dutt & co. Foundation Books, 2012.
5. **Current English grammar and usage-**S M Guptha, PHI, 2013.
6. **Modern English Grammar-**Krishna SWAMI .McMillan, 2009.
7. **Powerful Vocabulary Builder**- Anjana Agarwal New Age International Publishers, 2011.
8. **Writing with a Purpose, Tickoo and Sasi Kumar, OUP, 2011**
9. **Strengthen Your Writing, Orient Blackswan**

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I- Year B.Tech. I-Sem	**T**	**P**	**C**
	3	**0**	**3**

ENGINEERING GRAPHICS
(CIVIL, EEE, ECE, CSE & CHEMICAL)

Unit-I

Introduction to Engineering Drawing: Principles of Engineering Graphics and their significance Drawing Instruments and their Use – BIS Conventions in drawing and Lettering.

Curves used in practice:

a) Conic sections including the Rectangular Hyperbola
b) Cycloid, Epicycloid and Hypocycloid –Normals and Tangents
c) Involute of a circle –Normals and Tangents

Principles of orthographic projection, I and III angle projections –Conventions –Projections of points.

Unit –II

Projection of lines inclined to both planes –traces, Projection of plane figures inclined to both planes.

Unit –III

Projection of simple solids inclined to both planes.

Unit –IV

Sections and Developments: Sections and Sectional views of Regular solids –Prism, Cylinder, Pyramid, Cone – True shapes.

Unit –V

Isometric projections: Principles of pictorial representations-Isometric projection- Isometric scale-Isometric views- conventions- Isometric views of plane figures, solids-Isometric projection of objects with non isometric lines-Isometric projection of spherical parts.

TEXT BOOKS:

1. Engineering Drawing, N.D. Bhat, Charotar Publishers
2. Engineering Drawing, K.L. Narayana& P. Kannaih, Scitech Publishers, Chennai.

REFERENCES:

1. Engineering Drawing, Johle, Tata McGraw-Hill Publishers.
2. Engineering Drawing, Shah and Rana,2/e, Pearson Education
3. Engineering Drawing and Graphics, Venugopal/New age Publishers
4. Engineering Graphics, John&john.

Suggestions:

Student is expected to buy a book mentioned under 'Text books' for better understanding.
Student should prepare rough sketches for all the problems given at the end of each chapter to improve his / her imaginations.
Student should also practice Auto CAD or any other drawing software to help understanding better.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I Year B.Tech I Semester	**T**	**L**	**C**
	3+1*	**0**	**3**

APPLIED PHYSICS

(Common to EEE, ECE, CSE)

UNIT 1: PHYSICAL OPTICS, LASERS AND FIBRE OPTICS

Physical Optics: Introduction - Interference in thin films by reflection – Newton's Rings – Fraunhofer diffraction due to single slit, double slit and diffraction grating.

Lasers: Introduction - Characteristics of laser – Spontaneous and stimulated emission of radiation –- Einstein's coefficients — Population inversion – Pumping mechanisms - Ruby laser - He-Ne laser – Applications of lasers.

Fibre optics: Introduction– Construction and working principle of optical fiber –Numerical aperture and acceptance angle – Types of optical fibers –Optical fiber communication system – Applications of optical fibers.

UNIT 2: CRYSTALLOGRAPHY AND QUANTUM MECHANICS

Crystallography: Introduction – Space lattice –Unit cell – Lattice parameters –Bravias lattice – Crystal systems – Packing fractions of SC, BCC and FCC -Directions and planes in crystals – Miller indices – Interplanar spacing in cubic crystals – X-ray diffraction - Bragg's law –Bragg's Spectrometer.

Quantum Mechanics: Introduction to matter waves – de'Broglie hypothesis - Schrodinger's time independent wave equation – Significance of wave function - Particle in a one dimensional infinite potential well.

UNIT 3: FREE ELECTRON THEORY AND SEMICONDUCTORS

Free electron theory: Classical free electron theory –- Sources of electrical resistance - Equation for electrical conductivity - Quantum free electron theory – Fermi-Dirac distribution –Kronig-Penny model(qualitative) – Origin of bands in solids – Classification of solids into conductors, semiconductors and insulators.

Semiconductor physics: Introduction – Intrinsic and extrinsic semiconductors – Drift & diffusion currents and Einstein's equation – Continuity equation -Hall Effect.

UNIT 4: DIELECTRICS AND MAGNETIC MATERIALS

Dielectrics: Introduction – Dielectric Polarization – Types of Polarization – Lorentz field – Clausius-Mosotti equation – Dielectric strength, loss, breakdown.

Magnetic materials: Introduction and basic definitions – Origin of magnetic moment – Classification of magnetic materials into dia, para, ferro, antiferro and ferri magnetic materials – Hysteresis - Soft and hard magnetic materials – Applications of magnetic materials.

UNIT 5: SUPERCONDUCTIVITY AND PHYSICS OF NANOMATERIALS

Superconductivity: Introduction - Properties of superconductors – Meissner effect– Type I and type II superconductors – Flux quantization – London penetration depth – ac and dc Josephson effects – BCS theory(qualitative) - Applications of superconductors.

Physics of Nanomaterials: Introduction - Significance of nanoscale - Surface area and quantum confinement – Physical properties, optical, thermal, mechanical and magnetic properties – Synthesis of nanomaterials: ball milling, chemical vapour deposition, sol-gel – Carbon nanotubes & its properties.

Prescribed Text books:

1. Engineering physics – S. ManiNaidu, Pearson Education
2. Engineering Physics – P.K.Palanisamy, Scitech Publications

Reference Books:

1. Engineering Physics – V. Rajendran, K.Thyagarajan Tata MacGraw Hill Publishers
2. Engineering Physics – D K Pandey, S. Chaturvedi, Cengage Learning
3. Engineering Physics - Sanjay D. Jain, D. Sahasrambudhe and Girish University Press
4. Engineering Physics – M. Arumugam, Anuradha Publications
5. Engineering physics – M.N. Avadhanulu and P.G. KrshiSagar, Chand and Co
6. Nanomaterials – A.K.Bandopadhyaya, New Age Publishers
7. Carbon nanotubes and Graphene Device Physics – H.S. Philip Wong, Deji Akinwande, Cambridge University Press

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I B.Tech.-I Sem.

T	P	C
0	3	2

APPLIED PHYSICS LABORATORY

Any EIGHT of the following experiments has to be performed during the SEMESTER

1. Determination of wavelengths of various colours of mercury spectrum using diffraction grating in normal incidence method.
2. Determination of dispersive power of the prism
3. Determination of thickness of thin object by wedge method.
4. Determination of radius of curvature of lens by Newton's rings.
5. Laser : Diffraction due to single slit
6. Laser : Diffraction due to double slit
7. Laser: Determination of wavelength using diffraction grating
8. Determination of Numerical aperture of an optical fiber.
9. Meldes experiment: Determination of the frequency of tuning fork
10. Sonometer: Verification of the three laws of stretched strings
11. Energy gap of a material using p-n junction diode
12. Electrical conductivity by four probe method
13. Determination of thermistor coefficients (α, β)
14. Hall effect : Determination of mobility of charge carriers in semiconductor
15. B-H curve
16. Magnetic field along the axis of a current carrying coil – Stewart and Gee's method.
17. Determination of lattice constant using X-ray spectrum.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I Year B.Tech - I Semester

T	L	C
0	3	2

ENGLISH LANGUAGE COMMUNICATION SKILLS (ELCS) LAB

The **Language Lab** focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations and contexts.

OBJECTIVES:

- To train students to use language effectively in everyday conversations, to participate in group discussions, to help them face interviews, and sharpen public speaking skills
- To expose the students to a varied blend of self-instructional learner-friendly modes of language learning through computer-aided multi-media instruction.
- To enable them to learn better pronunciation through stress on word accent, intonation, and rhythm.
- To help the second language learners to acquire fluency in spoken English and neutralize mother tongue influence
- To train students to use language appropriately for interviews, group discussion and public speaking

SYLLABUS:

UNIT- I

Phonetics – Introduction to Sounds of Speech – Vowels – Consonants – Phonetic Transcription & Orthographic Transcription

UNIT – II

Syllabification – Word Stress – Rules of word stress – Intonation – Falling tone and Rising tone

UNIT – III

Situational Dialogues – Role-play – Expressions in various situations – Self Introduction – Introducing others – Greetings – Apologies – Requests – Social and Professional etiquettes – Telephone Etiquettes

UNIT – IV

JAM – Describing object/person/place/situation – Giving directions

UNIT – V

Debates and Group Discussions

EXPECTED OUTCOMES :

- Becoming active participants in the learning process and acquiring proficiency in spoken English of the students
- Speaking with clarity and confidence thereby enhancing employability skills of the students

MINIMUM REQUIREMENT FOR ELCS LAB:

The English Language Lab shall have two parts:

1. Computer Assisted Language Learning (CALL) Lab:
   The Computer aided Language Lab for 60 students with 60 systems, one master console, LAN facility and English language software for self- study by learners.
2. The Communication Skills Lab with movable chairs and audio-visual aids with a P.A. system, Projector, a digital stereo-audio & video system and camcorder etc.

System Requirement (Hardware component):

Computer network with LAN with minimum 60 multimedia systems with the following

specifications:

i) P – IV Processor
   a) Speed – 2.8 GHZ
   b) RAM – 512 MB Minimum
   c) Hard Disk – 80 GB
ii) Headphones of High quality

Suggested software:

1. Clarity Pronunciation Power – Part I (Sky Pronunciation)
2. Clarity Pronunciation Power – part II
3. K-Van Advanced Communication Skills
4. TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
5. *DELTA's key to the Next Generation TOEFL Test: Advanced Skills Practice.*
6. Lingua TOEFL CBT Insider, by Dreamtech
7. English Pronunciation in Use (Elementary, Intermediate, Advanced) CUP
8. Cambridge Advanced Learners' English Dictionary with CD.

Reference books:

1. **A Textbook of English Phonetics for Indian Students** 2nd Ed T. Balasubramanian. (Macmillian),2012.
2. **A Course in Phonetics and Spoken English**, Dhamija Sethi, Prentice-Hall of India Pvt.Ltd
3. **Speaking English Effectively**, 2nd Edition Krishna Mohan & NP Singh, 2011. (Mcmillan).
4. **A Hand book for English Laboratories**, E.Suresh kumar, P.Sreehari, Foundation Books,2011
5. **English Pronunciation in Use. Intermediate & Advanced** ,Hancock, M. 2009. CUP
6. **Basics of Communication in English** ,Soundararaj, Francis. 2012.. *New Delhi: Macmillan*
7. **Spoken English** (CIEFL) in 3 volumes with 6 cassettes, OUP.

English Pronouncing Dictionary, Daniel Jones Current Edition with CD.Cambridge, 17th edition, 2011.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I B.Tech.-I Sem. **T P C**

0 3 2

Engineering & IT Workshop
(Common to All Branches)

Part – A: Engineering Workshop Lab

1. TRADES FOR EXERCISES:

At least 2 exercise In each:

1. Carpentry
2. Fitting
3. House-wiring
4. Black Smithy
5. Tin smithy
6. Power Tools Demonstration

TEXT BOOK:

1. Work shop Manual / P.Kannaiah/ K.L.Narayana/ Scitech Publishers.

Objective : The objective of this subject is to provide the basic concepts about different manufacturing processes and use of various workshop tools the exposer to the Power tools used in the inclusion

Codes / Tables : Nil

Question Paper pattern : Test in any two out of 6 trades.

PART – B: IT Workshop

Course Objectives

- To provide Technical training to the students on Productivity tools like Word processors, Spreadsheets, Presentations
- To make the students know about the internal parts of a computer, assembling a computer from the parts, preparing a computer for use by installing the operating system
- Disassemble and Assemble a Personal Computer and prepare the computer ready to use
- Prepare the Documents using Word processors
- Prepare Slide presentations using the presentation tool
- Install single or dual operating systems on computer

Preparing your Computer (4 weeks)

Task 1: Identify the internal parts of a computer of a computer, and its peripherals. Represent the same in the form of diagrams including Block diagram.

Task 2: Disassemble and assemble the PC back to working condition. Students should be able to trouble shoot the computer and identify working and non-working parts. Student should identify the problem correctly by various methods available. Students should record the process of assembling and trouble shooting a computer.

Task 3: Student should install Linux on the computer. Student may install another operating system (including proprietary software) and make the system dual boot or multi boot. Students should record the entire installation process.

Task 4: Students should record the various features that are supported by the operating system installed and submit it.

Productivity tools (3 weeks)

Task 5: Word Processor: Students should be able to create documents using the word processor tool. Some of the tasks that are to be performed are inserting and deleting the characters, words and lines, Alignment of the lines, Inserting header and Footer, changing the font, changing the colour, including images and tables in the word file, making page setup, copy and paste block of text, images, tables etc, linking the images which are present in other directory, formatting paragraphs, spell checking, etc. Students should be able to prepare project cover pages etc at the end of the task. Students should submit a user manual of the word processor considered.

Task 6: Spreadsheet: Students should be able to create, open, save the application documents and format them as per the requirement. Some of the tasks that may be practiced are Managing the worksheet environment, creating cell data, inserting and deleting cell data, format cells, adjust the cell size, applying formulas and functions, preparing charts, sorting cells. Students should submit a user manual of the Spreadsheet application considered.

Task 7: Presentations : creating, opening, saving and running the presentations; Selecting the style for slides, formatting the slides with different fonts, colours; creating charts and tables, inserting and deleting text, graphics and animations; bulleting and numbering; hyperlinking, running the slide show, setting the timing for slide show. Students should submit a user manual of the Presentation tool considered.

References:

1. "Introduction to Computers", Peter Norton, Mc Graw Hill
2. "LaTeX Companion" – Leslie Lamport, PHI/Pearson.
3. "MOS study guide for word, Excel, Powerpoint & Outlook Exams", Joan Lambert, Joyce Cox, PHI.
4. "Introduction to Information Technology", ITL Education Solutions limited, Pearson Education.
5. "Networking your computers and devices", Rusen, PHI "Trouble shooting, Maintaining & Repairing PCs", Bigelows, TMH.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I- Year B.Tech. II-Sem	T	P	C
	3	0	3

MATHEMATICS - II

(Common to All Branches)

Objectives: Our emphasis will be more on conceptual understanding and application of Fourier series, Fourier, Z and Laplace transforms and vector calculus.

UNIT – I

Fourier Series: Determination of Fourier coefficients – Fourier series – Even and odd functions – Fourier series in an arbitrary interval – Even and odd periodic continuation – Half-range Fourier sine and cosine expansions.

UNIT – II

Fourier integral theorem (only statement) – Fourier sine and cosine integrals. Fourier transform – Fourier sine and cosine transforms – Properties – Inverse transforms – Finite Fourier transforms.

UNIT – III

z-transform – Inverse z-transform – Properties – Damping rule – Shifting rule – Initial and final value theorems. Convolution theorem – Solution of difference equations by z-transforms.

UNIT – IV

Laplace transform of standard functions – Inverse transform – First shifting Theorem, Transforms of derivatives and integrals – Unit step function – Second shifting theorem – Dirac's delta function – Convolution theorem – Laplace transform of Periodic function.

Differentiation and integration of transform – Application of Laplace transforms to ordinary differential equations of first and second order.

UNIT – V

Vector Calculus: Gradient – Divergence – Curl and their properties; Vector integration – Line integral - Potential function – Area – Surface and volume integrals. Vector integral theorems: Green's theorem – Stoke's and Gauss's Divergence Theorem (Without proof). Application of Green's, Stoke's and Gauss's Theorems.

TEXT BOOKS:

1. Higher Engineering Mathematics, B.S.Grewal, Khanna publishers.
2. Engineering Mathematics, Volume - II, E. Rukmangadachari & E. Keshava Reddy, Pearson Publisher.

REFERENCES:

1. Engineering Mathematics, Volume - II, by G.S.S.Raju, CENGAGE publisher.
2. Mathematical Methods by T.K.V. Iyengar, B.Krishna Gandhi, S.Ranganatham and M.V.S.S.N.Prasad S. Chand publication.
3. Higher Engineering Mathematics, by B.V.Ramana, Mc Graw Hill publishers.
4. Advanced Engineering Mathematics, by Erwin Kreyszig, Wiley India.

Outcomes:

- The student gains the knowledge to tackle the engineering problems using the concepts of Fourier series, various transforms and vector calculus.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I Year B.Tech. II-Sem	**T**	**P**	**C**
	3	**0**	**3**

MATHEMATICAL METHODS
(Common to All Branches)

Objectives:

- This course aims at providing the student with the concepts of Matrices, Numerical Techniques and Curve fitting.

UNIT – I

Elementary row transformations-Rank – Echelon form, normal form – Consistency of System of Linear equations. Linear transformations. Hermitian, Skew-Hermitian and Unitary matrices and their properties. Eigen Values, Eigen vectors for both real and complex matrices. Cayley – Hamilton Theorem and its applications – Diagonolization of matrix. Calculation of powers of matrix. Quadratic forms – Reduction of quadratic form to canonical form and their nature.

UNIT – II

Solution of Algebraic and Transcendental Equations: The Bisection Method – The Method of False Position– Newton-Raphson Method.

UNIT – III

Interpolation: Newton's forward and backward interpolation formulae – Lagrange's formulae. Gauss forward and backward formula, Stirling's formula, Bessel's formula,

UNIT – IV

Curve fitting: Fitting of a straight line – Second degree curve – Exponentional curve-Power curve by method of least squares. Numerical Differentiation and Integration – Trapezoidal rule – Simpson's 1/3 Rule – Simpson's 3/8 Rule.

UNIT – V

Numerical solution of Ordinary Differential equations: Solution by Taylor's series-Picard's Method of successive Approximations-Euler's Method-Runge-Kutta Methods – Predictor-Corrector Method – Milne's Method. Numerical solutions of Laplace equation using finite difference approximation.

TEXT BOOKS:

3. Higher Engineering Mathematics, B.S.Grewal, Khanna publishers.
4. Introductory Methods of Numerical Analysis, S.S. Sastry, PHI publisher.

REFERENCES:

3. Engineering Mathematics, Volume - II, E. Rukmangadachari & E. Keshava Reddy, Pearson Publisher.
4. Engineering Mathematics, Volume - II, by G.S.S.Raju, CENGAGE publisher.
5. Mathematical Methods by T.K.V. Iyengar, B.Krishna Gandhi, S.Ranganatham and M.V.S.S.N.Prasad, S. Chand publication.
4. Higher Engineering Mathematics, by B.V.Ramana, Mc Graw Hill publishers.
5. Advanced Engineering Mathematics, by Erwin Kreyszig, Wiley India.

Outcomes:

The student will be able to analyze engineering problems using the concepts of Matrices and Numerical methods.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I Year B.Tech - II Semester

L	P	C
3	0	3

BASIC ELECTRICAL ENGINEERING

Objective:

Basic Electrical Engineering contains basic Electrical Laws, Network theorems, AC & DC generators and motors which are widely used in industry are covered and their performance aspects will be studied.

UNIT – I INTRODUCTION TO ELECTRICAL ENGINEERING

Ohm's Law, Basic Circuit Components, Kirchhoff's Laws, Types of Sources, Resistive Networks, Inductive Networks, Capacitive Networks, Series Parallel Circuits, Star Delta and Delta Star Transformation. Principle of AC Voltages, 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 and Parallel Circuits.

UNIT- II NETWORK THEOREMS & TWO PORT NETWORKS

Network Theorems: Thevenin's, Norton's, Maximum Power Transfer and Millman's Theorems for DC and Sinusoidal Excitations. Tellegen's, Superposition, Reciprocity and Compensation Theorems for DC And Sinusoidal Excitations.

Two Port Networks: Two Port Network Parameters – Impedance, Admittance, Transmission and Hybrid Parameters and Their Relations. Concept of Transformed Network - Two Port Network Parameters Using Transformed Variables.

UNIT-III DC MACHINES

DC Generators: Principle of Operation, Constructional details, Types of DC Generators, E.M.F Equation, DC Generator characteristics and Applications.

DC Motors: Principle of Operation of DC Motors, Types of DC Motors, Torque Equation, Losses and Efficiency Calculation in DC Motor- Swinburne's Test and Applications.

UNIT-IV AC MACHINES

Transformers: Principles of Operation, EMF equation, Losses and Efficiency, Regulation of Transformer, Testing: OC & SC Tests.

Three Phase Induction Motors: Principle of Operation, Slip and Rotor Frequency, Slip- Torque characteristics (Problems).

Alternators: Principle of operation, EMF equation, Regulation of alternator by Synchronous Impedance method.

UNIT V MEASURING INSTRUMENTS

Introduction, Classification of Instruments, Operating Principles, Essential Features of Measuring Instruments, Moving Coil Permanent Magnet (PMMC) And Moving Iron Instruments (Voltmeters And Ammeters)- Extension of Range of the Meters.

OUTCOME:

After going through this course the student gets a thorough knowledge on basics of Network theorems, Two port networks, DC & AC Machines with which he/she can able to apply the above conceptual things to real-world problems and applications.

TEXT BOOKS:

1. Basic Electrical Engineering - By M.S.Naidu and S. Kamakshiah – TMH.
2. Basic Electrical Engineering –By T.K.Nagasarkar and M.S. Sukhija Oxford University Press.
3. Electrical and Electronic Technology-By Hughes – Pearson Education.

REFERENCES:

1. Theory and Problems of Basic Electrical Engineering by D.P.Kothari & I.J. Nagrath PHI.
2. Principles of Electrical Engineering by V.K Mehta, S.Chand Publications.
3. Fundamentals of Electrical Electronics Engineering by T.Thyagarajan, SCITECH Publications 5th Edition-2007

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I Year B.Tech - II Semester

L	T	P	C
3	1	0	3

ENGINEERING CHEMISTRY

(Common to EEE,ECE,CSE)

Knowledge in chemistry serves as basic nutrient for the understanding and thereby design of materials of importance in life. Thus the advancement in Engineering depends on the outcome of basic sciences. Many advances in engineering either produce a new chemical demand as in the case of polymers or wait upon chemical developments for their applications as in the case of implants and alloys. Currently the electronics and computer engineers are looking forward for suitable biopolymers and nano materials for use in miniature super computers, the electrical materials engineers are in search of proper conducting polymers, the mechanical engineers are on lookout for micro fluids and the civil engineers are looking for materials that are environmental friendly, economical but long lasting.

COURSE OBJECTIVES (CO):

- The Applied Chemistry course for undergraduate students is framed to strengthen the fundamentals of chemistry and then build an interface of theoretical concepts with their industrial/engineering applications.
- The main aim of the course is to impart in-depth knowledge of the subject and highlight the role of chemistry in the field of engineering.
- The lucid explanation of the topics will help students to understand the fundamental concepts and apply them to design engineering materials and solve problems related to them. An attempt has been made to logically correlate the topic with its application.
- The extension of fundamentals of electrochemistry to energy storage devices such as commercial batteries and fuel cells is one such example.
- After the completion of the course, the student would understand about the concepts of chemistry in respect of Electrochemical cells, fuel cells, mechanism of corrosion and factors to influence, polymers with their applications and engineering materials.

UNIT.1: ELECTROCHEMISTRY

i).Review of electrochemical cells, Numerical calculations, Batteries: Rechargeable batteries (Lead acid, Ni-Cd, Lithium Ion Batteries),Fuels cells: (Hydrogen-Oxygen and Methanol-Oxygen)

ii).Electrochemical sensors: Potentiometric Sensors and voltammetric sensors. Examples : analysis of Glucose and urea

iii).Corrosion: Electrochemical Theory of corrosion, Factors affecting the corrosion. Prevention: Anodic and cathodic protection and electro and electroless plating

UNIT.2: POLYMERS

i).Introduction to polymers, Polymerisation process, mechanism: cationic, anionic, free radical and coordination covalent.

Elastomers (rubbers), Natural Rubber; Compounding of Rubber

Synthetic Rubber: Preparation, properties and engineering applications of Buna-S, buna-N, Polyurethene, Polysulfide (Thiokol) rubbers

Plastomers: Thermosetting and Thermoplatics, Preparation, properties and Engineering applications ,

PVC, Bakelite, nylons.

ii).Conducting polymers: Mechanism, synthesis and applications of polyacetyline, polyaniline.

iii).Liquid Crystals: Introduction, classification and applications

iii).Inorganic Polymers: Basic Introduction, Silicones, Polyphospazins (-(R)2-P=N-) applications

UNIT.3: FUEL TECHNOLOGY

i).Classifications of Fuels – Characteristics of Fuels- Calorific Value – Units, Numerical Problems. Solid Fuels–Coal, Coke : Manufacture of Metallurgical Coke by Otto Hoffmann's by product oven processes.

ii).Liquid Fuels:

Petroleum: Refining of Petroleum, Gasoline: Octane Number, Synthetic Petrol: Bergius Processes, Fischer Troph's synthesis

Power Alcohol: Manufacture, Advantages and Disadvantages of Power Alcohol

iii). Gaseous Fuels: Origin, Production and uses of Natural gas, Producer gas, Water gas, Coal gas and Biogas.

iv). Nuclear Fuels: Controlled and uncontrolled reactions. Breeder reactor and Power reactors.

UNIT.4: CHEMISTRY OF ENGINEERING MATERIALS

i).Electrical Insulators or Dielectric materials: Definition and classification, Characteristics of electrical insulators. Applications of electrical insulating materials (Gaseous, liquid and solid insulators)

iii).Semiconducting and Super Conducting materials-Principles and some examples

iii).Magnetic materials – Principles and some examples

UNIT.5: PHOTOCHEMISTRY & COMPOSITE MATERIALS

i). Photochemical Reactions, Difference between Photochemical reactions and thermo chemical reactions. Absorption of light: Beer-Lambert's law . Photo-physical Processes: a) Fluorescence, (b) Phosphorescence and (c) Chemi-luminiscence and their applications

ii). Composite Materials: Classification of Composites materials, Constituents of Composite materials. Disperse Phase composite materials Ex. a) Glass fibre reinforced polymer composite and b) Carbon fibre reinforced polymer composite materials. Advantages and applications of Composites.

EXPECTED OUTCOMES (EO): The student is expected to:

- Understand the electrochemical sources of energy
- Understand industrially based polymers, various engineering materials.
- Differentiation and uses of different kinds of Photochemical reactions.

Text Books:

1. Engineering Chemistry by KNJayaveera, GVSubba Reddy and C. Ramachandraiah, McGraw Hill Higher Education, Foruth Edition, New Delhi
2. A Text book of Engineering Chemistry by SS Dhara, S. Chand Publications, New Delhi

References:

1. A Text Book of Enigneering Chemistry, Jain and Jain, Dhanapathi Rai Publications, New Delhi
2. Engineering Chemistry by K.B.Chandra Sekhar, UN.Das and Sujatha Mishra, SCITECH Pubblications India Pvt Limited.
3. Concepts of Engineering Chemistry- Ashima Srivastavaf and N.N. Janhavi
4. Text Book of Engineering Chemistry – C. Parameswara Murthy, C.V.Agarwal and Andra Naidu
5. Chemistry of Engineering Materials, C.V.Agarwal, C.Parameswaramurthy and Andranaidu
6. Text Book of Engineering Chemistry, Shashichawla, Dhanapathirai Publications.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I- Year B.Tech. II-Sem	T	P	C
	3	0	3

TECHNICAL COMMUNICATION & PRESENTATION SKILLS (Theory)

Preamble:

In the increasingly globalized world, technical communication and presentation skills are assuming great importance. Industries and employers constantly complain that young engineers have adequate technical knowledge, but no communication and presentation skills. Success is defined these days in terms of possessing these skills. The syllabus has been designed to develop communicative competencies of the students.

Objectives:

1. To develop awareness in students of the relevance and importance of technical communication and presentation skills.
2. To prepare the students for placements
3. To provide students with interactive practice sessions to make them internalize these skills

Outcome:

Turning out the students with a clear concept of communication and presentation skills, getting them ready for placements and equipping them with readiness to implement them at work place.

UNIT 1:

Basics of Technical Communication – Introduction – Objectives & Characteristics of Technical Communication – Importance and need for Technical communication - LSRW Skills – Barriers to effective communication

UNIT II

Informal and Formal Conversation - Verbal and Non-verbal communication –Kinesics, Proxemics, Chronemics, Haptics, Paralanguage

UNIT III

Written communication – Differences between spoken and written communication – Features of effective writing –Advantages and disadvantages of spoken and written communication

UNIT IV

Presentation Skills – Nature and importance of oral presentation – Defining the purpose – Analyzing the audience - Planning and preparing the presentation, organizing and rehearsing the presentation – Individual and group presentations - Handling stage fright

UNIT V

Interview Skills – The Interview process –Characteristics of the job interview – Pre-interview preparation techniques – Projecting the positive image – Answering Strategies

Prescribed Books

1. Effective Technical Communication, Ashrif Rizvi, TataMcGrahill, 2011
2. Technical Communication by Meenakshi Raman & Sangeeta Sharma, O U Press 2009

Reference Books

2013-2014

1. Communication Skills by Pushpalatha & Sanjay Kumar, Oxford Univsesity Press
2. Books on TOEFL/GRE/GMAT/CAT/ IELTS by Barron's/DELTA/Cambridge University Press.2012.
3. Soft Skills for Everyone, Butterfield Jeff, Cengage Publications, 2011.
4. Management Shapers Series by Universities Press (India) Pvt Ltd., Himayatnagar, Hyderabad 2008.
5. Handbook for Technical Writing by David A McMurrey & Joanne Buckely CENGAGE Learning 2008.
6. English for Technical Communication for Engineering Students, Aysha Vishwamohan, Tata Mc Graw-Hill 2009.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I Year B.Tech. II-Sem	**T**	**P**	**C**
	3	**0**	**3**

COMPUTER PROGRAMMING

Course Objective:

- To understand the core aspects of computer problem solving techniques
- To understand the programming language constructs
- To understand the programming paradigms
- To understand the compound data types
- To understand dynamic memory allocation concepts

Course Outcomes

- Able to design the flowchart and algorithm for real world problems
- Able to learn and understand new programming languages
- Able to construct modular and readable programs
- Able to write C programs for real world problems using simple and compound data types
- Adapt programming experience and language knowledge to other programming language contexts
- Employee good programming style, standards and practices during program development

Unit - I

Introduction to Computers: Computer Systems, Computing Environment, Computer Languages, Creating and Running Programs, System Developments.

Introduction to the C Language: Introduction, C programs, Identifiers, Types, Variables, Constants, Input and Output, Programming Examples.

Introduction to Computer Problem Solving: Introduction , The Problem-Solving Aspect, Top-down Design, Bottom - up Approach, Flowcharts, Implementation of Algorithms, Program Verification, The Efficiency of Algorithms, The Analysis of Algorithms.

Unit – II

Structure of C program: Expressions, Precedence and Associatively, Evaluating Expressions, Type Conversion, Statements, Sample Programs.

Selections and Making Decisions: Logical Data and Operators, Two way Selection, Multiway Selection.

Repetition: Concept of Loop, Pretest and Posttest Loops, Initialization and Updation, Event and Counter Controller Loop, Loops in C, Looping Applications.

Fundamental Algorithms: Exchanging the values between two variables, Counting, Summation of a set numbers, Factorial Computation, Sine Function Computation, Generation of the Fibonacci Sequence, Reversing the digits of a integer, Basic conversions, Character to Number Conversion

Unit – III

Factoring Methods: Finding Square root of a Number, The Smallest Deviser of an Integer, The GCD of two Integers, Generating Prime Numbers, Computing Prime Factor of an Integer, Computing the prime factors of an Integer, Generation of Pseudo Random Number, Raising the number to Large Power, Computing the n^{th} Fibonacci.

Functions: Introduction, User Defined Functions, Inter Function Communication, Standard Functions, Scope, Programming Examples.

Array Techniques: Array Order Reversal, Array Counting, Finding the Maximum Number Set, Removal Duplicates from an Ordered Array, Partitioning an Array, Finding k^{th} smallest Element, Longest Monotone Subsequence.

Arrays: Introduction, Two Dimensional Arrays, Multi Dimensional Arrays, Inter Function Communication, Array Applications, Exchange Sort, Binary Search, Linear Search.

Unit – IV

Strings: String Concepts, C Strings, Sting Input/Output Functions, Arrays of Strings, String Manipulation Functions, String/Data Conversion.

Enumerated, Structure, and Union Types: The Type Definition, Enumerated Types, Structure, Unions, Programming Applications.

Bitwise Operators: Exact Size Integer Types, Logical Bitwise Operators, Shift Operators, Mask.

Unit – V

Pointers: Introduction, Pointers for Inter Function Communication, Pointers to Pointers, Compatibility, Lvalue and Rvalue.

Pointer Applications: Array and Pointers, Pointer Arithmetic and Arrays, Passing an Array to a Function, Memory Allocation Functions, Array of Pointers, Programming Applications.

Binary Input/output: Text Versus Binary Streams, Standard Library Functions for Files, Converting File Type.

Text Books :

1. How to Solve it by Computer by R.G. Dromey, Pearson
2. Computer Science, A Structured Programming Approach Using C by Behrouz A. Forouzan & Richard F. Gilberg, Third Edition, Cengage Learning

Reference Books :

1. Programming in C: A Practical Approach, Ajay Mittal, Pearson.
2. The C programming Language, B. W. Kernighan and Dennis M. Ritchi, Pearson Education.
3. Problem Solving and Programming Designs in C, J. R. Hanly and E.B. Koffman.,
4. Programming with C Rema Theraja, Oxford
5. Problem Solving with C, M.T.Somashekara, PHI
6. C Programming with problem solving, J.A. Jones & K. Harrow,Dreamtech Press
7. Programming with C, R.S.Bickar, Universities Press.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I- Year B.Tech. II-Sem

T	P	C
0	3	2

ENGINEERING CHEMISTRY LAB

The experiments are designed in a manner that the students can validate their own theory understanding in chemistry by self involvement and practical execution. Thus the execution of these experiments by the student will reinforce his/her understanding of the subject and also provide opportunity to refine their understanding of conceptual aspects. As a result, the student gets an opportunity to have feel good factor at the laboratory bench about the chemical principles that he/she learned in the classroom.**Programme Objective**:

- Will learn practical understanding of the redox reaction
- Will able to understand the function of fuel cells, batteries and extend the knowledge to the processes of corrosion and its prevention
- Will learn the preparation and properties of synthetic polymers and other material that would provide sufficient impetus to engineer these to suit diverse applications
- Will also learn the hygiene aspects of water would be in a position to design methods to produce potable water using modern technology

LIST OF EXPERIMENTS

1. Determination of total hardness of water by EDTA method.
2. Determination of Copper by EDTA method.
3. Estimation of Dissolved Oxygen by Winkler's method
4. Determination of Copper by Iodometry
5. Estimation of iron (II) using diphenylamine indicator (Dichrometry – Internal indicator method).
6. Determination of Alkalinity of Water
7. Determination of acidity of Water
8. Preparation of Phenol-Formaldehyde (Bakelite)
9. Determination of Viscosity of oils using Redwood Viscometer I
10. Determination of Viscosity of oils using Redwood Viscometer II
11. Conductometric titration of strong acid Vs strong base (Neutralization titration).
12. Conductometric titration of Barium Chloride vs Sodium Sulphate (Precipitation Titration)
13. Determination of Corrosion rate and inhibition efficiency of an inhibitor for mild steel in hydrochloric acid medium.
14. Estimation of Chloride ion using potassium Chromite indicator (Mohrs method)

(Any 10 experiments from the above list)

Course Outcomes:

- Would be confident in handling energy storage systems and would be able combat chemical corrosion
- Would have acquired the practical skill to handle the analytical methods with confidence.
- Would feel comfortable to think of design materials with the requisite properties
- Would be in a postion to technically address the water related problems.

Text Books:

1. Vogel's Text book of Quantitative Chemical Analysis, Sixth Edition – J. Mendham et al, Pearson Education.
2. Chemistry Practical – Lab Manual by Chandra Sekhar, GV Subba Reddy and Jayaveera.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

I Year B.Tech II Semester **T P C**

0 3 2

COMPUTER PROGRAMMING LAB

(Common to Civil, EEE, ME, CSE, Chemical)

Week-1

1) Write an algorithm and draw a flowchart to make the following exchange between the variables a-> b -> c->d - > a
2) Write an algorithm and draw a flowchart to generate the first n terms of the sequence. 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.
3) Write a algorithm and draw a flowchart to carry out the arithmetic operations addition, subtraction, multiplication, and division between two variables
4) Write a algorithm and draw a flowchart for printing prime numbers between 1 and n.

Week-2

1) Write a C program to construct a multiplication table for a given number.
2) Write a program to reverse the digit of a given integer.
1) Write a C program to calculate the factorial of a given number

Week-3

Write a program to calculate tax, given the following conditions:

a) If income is less than 1,50,000 then no tax.
b) If taxable income is in the range 1,50,001 – 300,000 then charge 10% tax
c) If taxable income is in the range 3,00,001 – 500,000 then charge 20% tax
d) If taxable income is above 5,00,001 then charge 30% tax

Week-4

1) Write a program to print the calendar for a month given the first Week- day of the month.

Input the first day of the month (Sun=0,Mon=1,Tue=2,Wed=3,.....) :: 3

Total number of days in the month : 31

Expected output

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
-	*-*	*-*	*1*	*2*	*3*	*4*
5	*6*	*7*	*8*	*9*	*10*	*11*
12	*13*	*14*	*15*	*16*	*17*	*18*
19	*20*	*21*	*22*	*23*	*24*	*25*
25	*26*	*27*	*28*	*29*	*30*	*31*

Week-5

1) Write a program to print the Pascal triangle for a given number
2) Write a program to calculate the following expression for given x value

$$f(x) = a_0 + \sum_{n=1}^{\infty} \left(a_n \cos\frac{n\pi x}{L} + b_n \sin\frac{n\pi x}{L} \right)$$

Week-6

1) Write C code to define a function cash_dispense, which takes an amount as its input, and returns the number of 1000, 500, 100, 50, 20, 10, 5, 2, 1 rupee denomination that make up the given amount.
2) Write C code to reverse the contents of the array. For example, [1,2,3,4,5] should become [5,4,3,2,1]
3) Write a program that will search and find out the position where the given key element exist in a user chosen array and print it as output.

Week-7

1) Write C code to compute the frequency table of survey responses given by 20 users. The survey responses range from 1 to 5 and are stored in an array. For example, 10 responses are stored in the array [1,1,5,2,3,3,5,5,2,2]. The frequency table will be as shown below:
   a. 1 = 2
   b. 2 = 3
   c. 3 = 2
   d. 4 = 0
   e. 5 = 3
2) Write a program to define a function to sort an array of integers in ascending order by using exchange sort.

Week-8

1) Write a C program to check whether a given string is a palindrome or not, without using any built-in functions
2) Write a function that accepts a string and delete the first character.
3) Write a function that accepts a string and delete all the leading spaces.

Week-9

Write a program to accept a string from user and display number of vowels, consonants, digits and special characters present in each of the words of the given string.

Week-10

1) Write a C program to define a union and structure both having exactly the same numbers using the sizeof operators print the sizeof structure variables as well as union variable
2) Declare a structure *time* that has three fields *hr, min, secs.* Create two variables, *start_time* and *end_time.* Input there values from the user. Then while *start_time* is not equal to *end_time* display GOOD DAY on screen.

Week-11

1) Write a program to read in an array of names and to sort them in alphabetical order. Use sort function that receives pointers to the functions strcmp, and swap, sort in turn should call these functions via the pointers.
2) Write a program to read and display values of an integer array. Allocate space dynamically for the array using the *malloc()*.
3) Write a program to calculate area of a triangle using function that has the input parameters as pointers as sides of the triangle.

Week-12

1) Two text files are given with the names text1 and text2. These files have several lines of text. Write a program to merge (first line of text1 followed by first line of text2 and so on until both the files reach the end of the file) the lines of text1 and text2 and write the merged text to a new file text3.
2) Write a program to split a given text file into n parts. Name each part as the name of the original file followed by .part<**n>** where n is the sequence number of the part file.

Reference Books:

1. Computer Science, A Structured Programming Approach Using C by Behrouz A. Forouzan & Richard F. Gilberg, Third Edition, Cengage Learning
2. C Programming A Problem-Solving Approach, Behrouz A. Forouzan & E.V. Prasad, F. Gilberg, Third Edition, Cengage Learning
3. Programming with C Rema Theraja, Oxford
4. "C Test Your Skills", Kamthane, Pearson Education
5. Programming in C: A Practical Approach, Ajay Mittal, Pearson
6. Problem solving with C, M.T.Somasekhara, PHI
7. C Programming with problem solving, J.A. Jones & K. Harrow,Dreamtech Press

Programming withc, Byron S Gottfried, Jitender Kumar Chhabra, TMH, 2011

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

II Year B.Tech. I-Sem	**T**	**P**	**C**
	3	**0**	**3**

MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS

Course Objective: The objectives of this course are to equip the student with the basic inputs of Managerial Economics and Economic Environment of business and to enrich analytical skills in helping them take sound financial decisions for achieving higher productivity.

Unit I: INTRODUCTION TO MANAGERIAL ECONOMICS

Managerial Economics - Definition, nature and scope – contemporary importance of Managerial Economics - Demand Analysis: Determinants- Law of Demand - Elasticity of Demand. Significance – types – measurement of elasticity of demand - Demand forecasting- factors governing demand forecasting- methods of demand forecasting –Relationship of Managerial Economics with Financial Accounting and Management.

UNIT II :THEORY OF PRODUCTION AND COST ANALYSIS

Production Function – Short-run and long- run production - Isoquants and Isocosts, MRTS, least cost combination of inputs - Cobb-Douglas production function - laws of returns - Internal and External economies of scale - **Cost Analysis**: Cost concepts - Break-Even Analysis (BEA) - Managerial significance and limitations of BEA - Determination of Break Even Point (Simple Problems)

UNIT III: INTRODUCTION TO MARKETS AND NEW ECONOMIC ENVIRONMENT

Market structures: Types of Markets - Perfect and Imperfect Competition - Features, Oligopoly - Monopolistic competition. Price-Output determination - Pricing Methods and Strategies. Forms of Business Organization – Sole Proprietorship- Partnership – Joint Stock Companies – Public Sector Enterprises – New Economic Environment- Economic systems – Economic Liberalization – Privatization and Globalization

UNIT IV INTRODUCTION TO FINANCIAL ACCOUNTING AND ANALYSIS

Financial Accounting – Concept - emerging need and importance - Double-Entry Book Keeping- Journal - Ledger – Trial Balance - Financial Statements - - Trading Account – Profit & Loss Account – Balance Sheet (with simple adjustments). Financial Analysis – Ratios – Techniques – Liquidity, Leverage, Profitability, and Activity Ratios (simple problems).

UNIT V: CAPITAL AND CAPITAL BUDGETING

Concept of Capital - Over and Under capitalization – Remedial measures - Sources of Shot term and Long term capital - Estimating Working Capital requirement – Capital budgeting – Features of Capital budgeting proposals – Methods and Evaluation of Capital budgeting – Pay Back Method – Accounting Rate of Return (ARR) – Net Present Value (NPV) – Internal Rate Return (IRR) Method (simple problems).

Learning Outcome: The thorough understanding of Managerial Economics and Analysis of Financial Statements facilitates the Technocrats – cum – Entrepreneurs to take-up decisions effectively and efficiently in the challenging Business Environment.

TEXT BOOKS:

1. VijayaKumar.P. and Apparao. N. Managerial Economics and Financial Analysis,Cengage,2012
2. Aryasri: Managerial Economics and Financial Analysis, 4/e, TMH, 2009.

REFERENCES

1. Subhash Sharma & Vithal .M.P.Financial Accounting for Management, Macmillan,2010.
2. Varshney & Maheswari: Managerial Economics, Sultan Chand, 2009.
3. S.A. Siddiqui and A.S. Siddiqui: Managerial Economics and Financial Analysis, New Age International, 2009.
4. Domnick Salvatore: Managerial Economics in a Global Economy, Cengage, 2009.
5. Shailaja & Usha: Managerial Economics and Financial Analysis, University Press, 2012.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

II Year B.Tech. I-Sem

T	P	C
3	0	3

PROBABILITY AND STATISTICS
(Common for CSE, Chemical)

Objectives: To help the students in getting a thorough understanding of the fundamentals of probability and usage of statistical techniques like testing of hypothesis, ANOVA, Statistical Quality Control and Queuing theory

UNIT – I

Conditional probability – Baye's theorem. Random variables – Discrete and continuous Distributions – Distribution functions. Binomial and poison distributions Normal distribution – Related properties.

UNIT – II

Test of Hypothesis: Population and Sample - Confidence interval of mean from Normal distribution - Statistical hypothesis - Null and Alternative hypothesis - Level of significance - Test of significance - Test based on normal distribution - Z test for means and proportions; Small samples - t- test for one sample and two sample problem and paired t-test, F-test and Chi-square test (testing of goodness of fit and independence).

UNIT – III

Analysis of variance one way classification and two way classification (Latic square Design and RBD)

UNIT – IV

Statistical Quality Control: Concept of quality of a manufactured product -Defects and Defectives - Causes of variations - Random and assignable - The principle of Shewhart Control Chart-Charts for attribute and variable quality characteristics- Constructions and operation of X- bar Chart, R-Chart, P-Chart and C-Chart.

UNIT – V

Queuing Theory: Pure Birth and Death process, M/M/1 & M/M/S & their related simple problems.

TEXT BOOKS:

1. Probability & Statistics for engineers by Dr. J. Ravichandran WILEY-INDIA publishers.
2. Probability & Statistics by T.K.V. Iyengar, B.Krishna Gandhi, S.Ranganatham and M.V.S.S.N.Prasad, S.Chand publications.

REFERENCES:

1. Probability & Statistics by E. Rukmangadachari & E. Keshava Reddy, Pearson Publisher.
2. Statistical methods by S.P. Gupta, S.Chand publications.
3. Probability & Statistics for Science and Engineering by G.Shanker Rao, Universities Press.
4. Probability and Statistics for Engineering and Sciences by Jay L.Devore, CENGAGE.
5. Probability and Statistics by R.A. Jhonson and Gupta C.B.

Outcomes: The student will be able to analyze the problems of engineering & industry using the techniques of testing of hypothesis, ANOVA, Statistical Quality Control and Queuing theory and draw appropriate inferences.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

II Year B.Tech. I-Sem	**T**	**P**	**C**
	3	**0**	**3**

ELECTRONIC DEVICES AND CIRCUITS

Course Objectives:

To give understanding on semiconductor physics of the intrinsic, p and n materials, characteristics of the p-n junction diode, diode's application in electronic circuits, Characteristics of BJT,FET,MOSFET, characteristics of special purpose electronic devices. To familiarize students with dc biasing circuits of BJT, FET and analyzing basic transistor amplifier circuits.

Course Outcomes:

Upon completion of the course, students will:

- Analyze the operating principles of major electronic devices, its characteristics and applications.
- Design and analyze the DC bias circuitry of BJT and FET.
- Design and analyze basic transistor amplifier circuits using BJT and FET.

UNIT- I

Junction Diode Characteristics : Open circuited p-n junction, Biased p-n junction, p-n junction diode, current components in PN junction Diode, diode equation, V-I Characteristics, temperature dependence on V-I characteristics, Diode resistance, Diode capacitance, energy band diagram of PN junction Diode.

Special Semiconductor Diodes: Zener Diode, Breakdown mechanisms, Zener diode applications, LED, LCD, Photo diode, Varactor diode, Tunnel Diode, DIAC, TRIAC, SCR, UJT. Construction, operation and characteristics of all the diodes is required to be considered.

UNIT- II

Rectifiers and Filters: Basic Rectifier setup**,** half wave rectifier, full wave rectifier, bridge rectifier, derivations of characteristics of rectifiers, rectifier circuits-operation, input and output waveforms, Filters, Inductor filter, Capacitor filter, L- section filter, Π- section filter, Multiple L- section and Multiple Π section filter ,comparison of various filter circuits in terms of ripple factors.

UNIT- III

Transistor Characteristics:

BJT: Junction transistor, transistor current components, transistor equation, transistor configurations, transistor as an amplifier, characteristics of transistor in Common Base, Common Emitter and Common Collector configurations, Ebers-Moll model of a transistor, punch through/ reach through, Photo transistor, typical transistor junction voltage values.

FET: FET types, construction, operation, characteristics, parameters, MOSFET-types, construction, operation, characteristics, comparison between JFET and MOSFET.

UNIT- IV

Transistor Biasing and Thermal Stabilization : Need for biasing, operating point, load line analysis, BJT biasing- methods, basic stability, fixed bias, collector to base bias, self bias, Stabilization against variations in V_{BE}, Ic, and β, Stability factors, (S, S', S''), Bias compensation, Thermal runaway, Thermal stability.

FET Biasing- methods and stabilization.

UNIT- V

Small Signal Low Frequency Transistor Amplifier Models:

BJT: Two port network, Transistor hybrid model, determination of h-parameters, conversion of h-parameters, generalized analysis of transistor amplifier model using h-parameters, Analysis of CB, CE and CC amplifiers using exact and approximate analysis, Comparison of transistor amplifiers.

FET: Generalized analysis of small signal model, Analysis of CG, CS and CD amplifiers, comparison of FET amplifiers.

Text Books:

1. J. Millman, C. Halkias, "Electronic Devices and Circuits", Tata Mc-Graw Hill, Second Edition,2010.
2. David A.Bell, "Electronic Devices and Circuits", Fifth Edition, Oxford University Press, 2009.
3. Salivahanan, Kumar, Vallavaraj, "Electronic Devices and Circuits", Tata Mc-Graw Hill, Second Edition

References:

1. Jacob Millman, C. Halkies, C.D.Parikh, "Integrated Electronics", Tata Mc-Graw Hill, 2009.
2. R.L. Boylestad and Louis Nashelsky, "Electronic Devices and Circuits", Pearson Publications,,9thEdition,2006.
3. BV Rao, KBR Murty, K Raja Rajeswari, PCR Pantulu, "Electronic Devices and Circuits", Pearson, 2nd edition.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

II Year B.Tech. I-Sem	T	P	C
	3	0	3

DATA STRUCTURES

Course Objective

- To develop skills to design and analyze linear and non linear data structures.
- Develop algorithms for manipulating linked lists, stacks, queues, trees and graphs.
- Develop recursive algorithms as they apply to trees and graphs.
- To get acquaintance with frequently used data structures in Software Engineering and Programming practices.
- To Strengthen the ability to identify and apply the suitable data structure for the given real world problem
- To develop a base for advanced computer science study.

Unit - I :

Introduction and Overview: System Life Cycle, Definition, Concept of Data Structures, Overview of Data Structures, Implementation of Data Structures.

Stacks: Definition, The Abstract Data Type, Array Representation, Linked Representation.

Queues: Definition, The Abstract Data Type, Array Representation, Linked Representation, Circular Queues, Applications.

Linked Lists: Single Linked Lists – Insertion and Deletion, Double Linked Lists – Insertion and Deletion.

Unit – II

Sorting: Motivation, Quick Sort, Merge Sort, Insertion Sort, Heap Sort.

Trees: Introduction, Representation of Trees, Binary Trees, Binary Tree Traversal and Tree Iterators, Additional Binary Tree Operations, Threaded Binary Trees, Binary Search Trees, Selection Trees.

Unit – III

Graphs: The Graph Abstract Data Type, Elementary Graph Operations.

Skip Lists and Hashing: Dictionaries, Linear List Representation, Skip List Representation, Hash Table Representation, Static and Dynamic Hashing.

Unit – IV

Priority Queues: Definition and Applications, Single and Double Ended Priority Queues, Linear Lists, Heaps, Leftist Trees, Binomial Heaps, Fibonacci Heaps, Pairing Heaps.

Unit – V

Efficient Binary Search Trees: Optimal Binary Search Trees, AVL Trees, Red – Black Trees, Splay

Trees.

Multiway Search Trees: m – way Search Trees, B – Trees, B^+ - Trees

TEXT BOOKS:

1. Fundamentals of Data Structures in C++ by Ellis Horowitz, Sartaj Sahni, Dinesh Mehta, Universities Press, Second Edition.
2. Data Structures, Algorithms and Applications in C++ by Sartaj Sahni, Universities Press, Second Edition

REFERENCES:

1. Data Structures and Algorithms Using C++ by Ananda Rao Akepogu and Radhika Raju Palagiri
2. Classic Data Structure by D. Samanta, Eastern Economy Edition.
3. Data Structures and Algorithms Made Easy by Narasimha Karumanchi, Second Edition, Written in C/C++, CareerMonk Publications, Hyderabad
4. ADTs, Data Structures and Problem Solving with C++, Larry Nyhoff, Pearson
5. Data Structures using C++, D.S.Malik, 2nd Edition, Cengage Learning
6. Data Structures through C++, Yashavant P.Kanetkar, BPB Publication
7. Data Structures using C and C++, Yedidyah Langsam.Moshe J.Augenstein Aaron M.Tenenbaum, 2nd Edition,PHI
8. Data Structures using C & C++, Rajesh K.Shukla, Wiley-India

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

II Year B.Tech. I-Sem	**T**	**P**	**C**
	3	**0**	**3**

DIGITAL LOGIC DESIGN

Course Objective

- Ability to interpret, convert and represent different number systems and binary arithmetic.
- Acquire the skills to manipulate and examine Boolean algebra, logical operations, Boolean functions and their simplifications.
- Get familiarized with fundamental principles of digital design.
- Aquatinted with classical hardware design for both combinational and sequential logic circuits.
- To design different units of a digital computer.

Unit - I :

Binary Systems: Digital Systems, Binary Numbers, Number Base Conversions, Octal and Hexadecimal Numbers, Compliments, Signed Binary Numbers, Binary Codes, Binary Storage and Registers, Binary Logic.

Boolean Algebra And Logic Gates: Basic Definitions, Axiomatic Definition of Boolean Algebra, Basic Theorems and properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Other Logic Operations, Digital Logic Gates, Integrated Circuits

Unit – II:

Gate – Level Minimization: The Map Method, Four Variable Map, Five-Variable Map, Product of Sums Simplification, Don't-Care Conditions, NAND and NOR Implementation, Other Two Level Implementations, EX-OR Function, Other Minimization Methods

Unit – III :

Combinational Logic: Combinational Circuits, Analysis Procedure, Design Procedure, Binary Adder-Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers

Unit – IV :

Synchronous Sequential Logic: Sequential Circuits, Latches, Flip-Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Design Procedure, Registers, Shift Registers, Ripple Counters, Synchronous Counters, Other counters

Unit – V :

Memory And Programmable Logic: Random access memory, memory decoding, Error Detection and Correction, Read-only Memory, Programmable Logic Array, Programmable Array Logic.

Digital Logic Circuits: RTL and DTL Circuits, Transistor-Transistor Logic (TTL), Emitter-Coupled Logic (ECL), MOS, CMOS Logic, Comparisons of Logic Families

Text Books :

1. Digital Design, M.Morris Mano & Micheal D. Ciletti, Pearson, 5th Edition, 2013.
2. Digital Logic & State Machine Design, David J. Comer, Oxford University Press, 3rd Reprinted Indian Edition, 2012

Reference Books :

1. Digital Logic Design, R.D. Sudhakar Samuel, Elsevier
2. Fundamentals of Logic Design, 5/e, Roth, Cengage
3. Switching and Finite Automata Theory,3/e,Kohavi, Jha, Cambridge.
4. Digital Logic Design, Leach, Malvino, Saha,TMH
5. Modern Digital Electronics, R.P. Jain, TMH

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

II Year B.Tech. I-Sem	**T**	**P**	**C**
	3	**0**	**3**

DISCRETE MATHEMATICS

Course Objective

- Apply logical reasoning to solve a variety of problems.
- Understand and apply methods of discrete mathematics such as proofs, counting principles, number theory, logic and set theory to mathematical problems in a creative way.
- To apply the abstract concepts of graph theory in modelling and solving non-trivial problems in different fields of study.
- To provide a prerequisite for the courses like Fundamentals of Computer Organization, RDBMS, Analysis of Algorithms, Theory of Computation, Cryptography, Artificial Intelligence…

Unit - I :

The Language of Logic: Propositions, Logical Equivalences, Quantifiers, Arguments, Proof Methods.

The Language of Sets: The Concepts of a Set, Operations with Sets, Computer Operations with Sets, The Cardinality of a Set, Recursively Defined Sets.

Functions: The concept of Functions, Special Functions, Properties of Functions, The Pigeonhole principle, Composite Functions, Sequences and the Summation Notation.

Unit – II:

Relations: Boolean Matrices, Relations and Digraphs, Computer Representations of Relations, Properties of Relations, Operations on Relations, Transitive Closure, Equivalence Relations, Partial and Total Ordering.

Lattices & Boolean Algebra: Lattices as Partially Ordered Sets, Properties of Lattices, Lattices as Algebraic Systems, Sublattices, Direct Product and Homomorphism, Boolean Algebra, Boolean Functions

Unit – III :

Algebraic Structures: Algebraic Systems, Semigroups and Monoids, Groups, Subgroups and Homomorphisms, Normal Subgroups.

Combinatorics: The Fundamental Counting Principles, Permutations, Derangements, Combinations, Permutations and Combinations with Repetitions, The Binomial Theorem, The Generalized Inclusion-Exclusion Principle.

Unit – IV :

Induction and Algorithms: The Division Algorithm, Divisibility Properties, Nondecimal Bases, Mathematical Induction, Algorithm Correctness, The Growth Functions, Complexity of Algorithms.

Recursion: Recursively Defined Functions, Solving Recurrence Relations, Generating Functions, Recursive

Algorithms, Correctness of Recursive Algorithms, Complexities of Recursive Algorithms.

Unit – V :

Graphs: Computer Representation of Graphs, Isomorphic Graphs, Paths, Cycles, and Circuits, Eulerian and Hamiltonial Graphs, Planar Graphs, Graph Coloring, Digraphs, Dags, Weighted Digraphs, DFS and BFS Algorithms.

Trees: Trees, Spanning Trees, Minimal Spanning Trees, Kruskal's and Prim's Algorithm, Rooted Trees, Binary Trees, and Binary Search Trees.

Text Books:

1. Discrete Mathematics with Applications, Thomas Koshy, Elsevier Academic Press.
2. Discrete Mathematical Structures with Applications to Computer Science, J.P. Tremblay and R. Manohar, TMH

Reference Books:

1. *Discrete and Combinatorial Mathematics, Fifth Edition, R. P. Grimaldi, B.V. Ramana, Pearson*
2. *Discrete Mathematics Theory and Applications, D.S Malik and M.K. Sen, Cengage Learning*
3. *J .L.Mott, A.Kandel, T.P .Baker, Discrete Mathematics for Computer Scientists and Mathematicians, second edition 1986, Prentice Hall of India*
4. *C.L.Liu, Elements of Discrete Mathematics, Second Edition 1985, McGraw-Hill Book Company. Reprinted 2000*
5. *Discrete Mathematics, Norman L. Biggs, Second Edition, OXFORD Indian Edition.*
6. *K.H.Rosen, Discrete Mathematics and applications, 5th Edition 2003, TataMcGraw Hillpublishing Company*
7. Graph Theory with Applications to Engineering & Computer Science: Narsingh Deo, PHI (2004) "Discrete Mathematical Structures" Jayant Ganguly, Sanguine.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

II Year B.Tech. I-Sem	T	P	C
	0	3	2

BASIC ELECTRICAL AND ELECTRONICS LAB

PART – A: ELECTRICAL ENGINEERING LAB

1. Verification of Superposition Theorem.
2. Verification of Thevenin's Theorem.
3. Open Circuit Characteristics of D.C.Shunt Generator.
4. Swinburne's Test on DC Shunt Machine (Predetermination of Efficiency of a Given DC Shunt Machine Working as Motor and Generator).
5. Brake Test on DC Shunt Motor. Determination of Performance Characteristics.
6. OC & SC Tests on Single-Phase Transformer (Predetermination of Efficiency and Regulation at Given Power Factors).

PART – B: ELECTRONICS ENGINEERING LAB

1. CRO Operation and its Measurements

2. P-N Junction Diode Characteristics

3. Zener Diode Characteristics

Part A: V-I Characteristics

Part B: Zener Diode act as a Voltage Regulator

4. Rectifiers (without filter)

Part A: Half-wave Rectifier

Part B: Full-wave Rectifier

5. BJT Characteristics(CE Configuration)

Part A: Input Characteristics

Part B: Output Characteristics

6. BJT Characteristics (CB Configuration)

Part A: Input Characteristics

Part B: Output Characteristics

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuram
Department of Computer Science & Engineering

B.Tech. II – I Sem. (C.S.E)	T	P	C
	0	3	2

Data Structures Lab

Course Objective

- To write and execute programs in C to solve problems using data structures such as arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees.
- To write and execute write programs in C to implement various sorting and searching methods
- Exemplify and implement how abstract data types such as stack, queue and linked list can be implemented to manage the memory using static and dynamic allocations
- Understand and distinguish the conceptual and applicative differences in trees, binary trees, and binary search trees
- Examine and analyze why self balancing trees are necessary in real world dynamic applications
- Develop and compare the comparison-based search algorithms and sorting algorithms

Week 1

a) Write a Program to Implement Stack Operations by using Array and Linked Lists.
b) Write a Program to Implement the Operations of Double Linked Lists

Week 2

a) Write a C program that uses stack operations to convert a given infix expression into its postfix
b) Write a Program to Implement Queue Operations by using Array and Linked Lists.

Week 3

Write a Program to Implement Circular Queue Operations by using Array and Linked Lists.

Week 4

Write a Program to Sort the set of elements by using
i). Quick Sort ii). Heap Sort. iii). Merge Sort

Week 5

Write a Program to Implement the Binary Search Tree Operations.

Week 6

Write a Program to Perform the Tree Traversal Techniques by using the Iterative Method

Week 7

Write C programs for implementing the following graph traversal algorithms:
a)Depth first traversal b)Breadth first traversal
.

Week 8

Write a Program to Implement All functions of a Dictionary by using Hashing

Week 9

Write a Program to Implement Skip List Operations.

Week 10

Write a Program to Implement Insertion, Deletion and Search Operations on SPLAY Trees.

Week 11

Write a program to Implement Insertion and Deletion Operations on AVL Trees

Week 12

Write a Program to Implement Insertion and Deletion Operations on B – Trees

Note: Use Classes and Objects to implement the above programs.

Reference Books:

9. Object Oriented Programming with ANSI & Turbo C++, Ashok N.Kamthane, Pearson Education
10. Data Structures using C++, D.S.Malik, 2nd Edition, Cengage Learning
11. Data Structures through C++, Yashavant P.Kanetkar, BPB Publication
12. Data Structures using C and C++, Yedidyah Langsam.Moshe J.Augenstein Aaron M.Tenenbaum, 2nd Edition,PHI
13. Data Structures using C & C++, Rajesh K.Shukla, Wiley-India
14. ADTs, Data Structures and Problem Solving with C++, Larry Nyhoff, Pearson

JNTUA College Of Engineering (Autonomous):: Anantapuram
Department of Computer Science & Engineering

B.Tech. II – II Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Computer Organization

Course Objective

- To make the students understand the structure and behavior of various functional modules of a computer.
- To explore the memory and I/O organizations in depth
- To study the concepts of pipelining and multiprocessors

Course Outcomes

- Thorough understanding of the working of computer
- Optimize the algorithms to exploit pipelining and multiprocessors
- Algorithm design for bit level arithmetic
- Ability to use memory and I/O devices effectively

Unit - I :
Introduction to Computer Organization and Architecture
Basic Computer Organization – CPU Organization – Memory Subsystem Organization and Interfacing – I/O Subsystem Organization and Interfacing – A Simple Computer Levels of Programming Languages, Assembly Language Instructions, Instruction Set Architecture Design, A simple Instruction Set Architecture

Unit – II:
CPU Design: Instruction Cycle – Memory – Reference Instructions – Input/output and Interrupt – Addressing Modes – Data Transfer and Manipulation – Program Control.
Computer Arithmetic: Addition and Subtraction – Multiplication Algorithms – Division Algorithms – Floating-Point Arithmetic Operations – Decimal Arithmetic unit

Unit – III :
Register Transfer: Register Transfer Language – Register Transfer – Bus and Memory Transfers – Arithmetic Micro operations – Logic Micro operations – Shift Micro operations.
Control Unit: Control Memory – Address Sequencing – Micro program Example – Design of Control Unit

Unit – IV :
Memory Organization: Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory.
Input/output Organization: Input-Output Interface – Asynchronous Data Transfer – Modes of Transfer – Priority Interrupt – Direct Memory Access (DMA).

Unit – V :
Pipeline: Parallel Processing – Pipelining – Arithmetic Pipeline – Instruction Pipeline.
Multiprocessors: Characteristics of Multiprocessors – Interconnection Structures – Inter Processor Arbitration – Inter Processor Communication and Synchronization

Text Books :

1. "Computer Systems Organization and Architecture", John D. Carpinelli, PEA, 2009.
2. "Computer Systems Architecture", 3/e, M. Moris Mano, PEA, 2007

Reference Books :

1. "Computer Organization", Carl Hamacher, Zvonks Vranesic, SafeaZaky, 5/e, MCG, 2002.
2. "Computer Organization and Architecture", 8/e, William Stallings, PEA, 2010.
3. "Computer Systems Architecture a Networking Approach", 2/e, Rob Williams.
4. "Computer Organization and Architecture" Ghoshal, Pearson Education, 2011.
5. "Computer Organization and Architecture", V. Rajaraman, T. Radakrishnan.
6. "Computer Organization and Design", P. Pal Chaudhuri, PHI
7. "Structured Computer Organization", Andrew S. Janenbaum, Todd Austin
8. "Computer Architecture" Parahmi, Oxford University Press

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuram
Department of Computer Science & Engineering

B.Tech. II – II Sem. (C.S.E)	**T**	**P**	**C**
	4	**0**	**3**

DataBase Management Systems

Course Objective
To provide the student with clear conceptual understandings related to databases. After this course, the student should gain knowledge in the relational model, SQL, database design, storage & indexing, failure recovery and concurrency control

Course Outcomes
- Students can design the simple database, and can use the SQL instructions in developing the database applications.
- Can apply the ER concepts to design the databases.
- Advanced concepts like triggers, assertions and constraints can be applied effectively in designing the business applications

Unit - I :
The Worlds of Database Systems -The Evolution of Database Systems - Overview of a Database Management System - Outline of Database System Studies. The Entitiy-Relationship Model – Elements of E/R Model – Design Principles – The Modeling of Constraints – Weak Entity Sets.

Unit – II:
The Relational Data Model – Basics of the Relational Model – From E/R Diagrams to Relational Designs – Converting Subclass Structures to Relations – Functional Dependencies – Rules about Functional Dependencies -- Design of Relational Database Schemas – Multivalued Dependencies

Unit – III :
Relational Algebra – An Algebra of Relational Operations – Relational Operations on Bags – Extended Operations of Relational Algebra – Constraints on Relations. The Database Language SQL – Simple Queries in SQL – Queries Involving More than One Relation – Subqueries – Full Relation Operations – Database Modifications – Defining a Relation Schema in SQL – View Definitions

Unit – IV :
Representing Data Elements – Data Elements and Fields – Records – Representing Block and Record Addresses – Variable Length Data and Records – Record Modifications. Index Structures – Indexes on Sequential Files – Secondary Indexes – B-Trees – Hash Tables

Unit – V :
Coping with System Failures – Issues and Models for Resilient Operation – Undo Logging – Redo Logging – Undo/Redo Logging – Protecting Against Media Failures. Concurrency Control – Serial and Serializable Schedules – Conflict Serializability – Enforcing Serializability by Locks – Locking Systems with Several Lock Modes -- Concurrency Control by Timestamps – Concurrency Control by Validation

Text Books :
1. “Database Systems, The Complete Book”, Hector Garcia-Molina, Jeffrey D. Ullman and Jennifer Widom. Pearson Education.2nd Edition.

2. “Fundamentals of Database Systems”, Elmasri Navrate Pearson Education

Reference Books :

1. “Data base Systems design”, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. “Data base Management Systems”, Raghurama Krishnan, Johannes Gehrke, TATA McGraw Hill 3rd Edition.
3. “Introduction to Database Systems”, C.J.Date, Pearson Education
4. “Data base System Concepts”, Silberschatz, Korth, McGraw hill, V edition

JNTUA College Of Engineering (Autonomous):: Anantapuram
Department of Computer Science & Engineering

B.Tech. II – II Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Java Programming

Course Objective

- Study the syntax, semantics and features of Java Programming Language
- Study the Object Oriented Programming Concepts of Java Programming language
- Learn the method of creating Multi-threaded programs and handle exceptions
- Learn Java features to create GUI applications & perform event handling
- To be able to develop high quality, working software that solves real problems
- Able to comprehend the art of programming and, in particular, the structure and meaning of basic Java programs

Unit - I :
The Java Language, The key attributes of object oriented programming language, JDK, simple program, Java keywords, identifiers in java, the java class libraries, introducing data types and operators, program control structures

Unit – II:
Introducing classes, objects, and methods, Arrays, multidimensional arrays, strings, a closer look at methods and classes, Inheritance

Unit – III :
Interface fundamentals, creating and implementing an interface, using interface references, implementing multiple interfaces, constants in interfaces, interfaces can be extended, nested interfaces, final thoughts on interface, packages, Exception handling

Unit – IV :
Byte streams and character streams, byte and character stream classes, using byte streams for reading and writing, reading and writing binary data, random access files, using character streams for file i/o, Multi threaded programming, Applet basics, a complete applet skeleton, applet initialization and termination, requesting repainting, using the status window, passing parameters to applets

Unit – V :
Swings – the origin and design philosophy of swing, components and containers, layout managers, event handling, using a push button, jtextfield, jlabel and image icon, the swing buttons, jtext field, jscrollpane, jlist, jcombobox, trees, jtable, an overview of jmenubar, jmenu and jmenuitem, creating a main menu, showmessagedialog, showconfirmdialog, showinputdialog, showoptiondialog, jdialog, create a modeless dialog

Text Books :

1. "Java Fundamentals A Comprehensive Introduction" Herbert Schildt and Dale Skrien, Mc Graw Hill.
2. "Java – How to Program", Paul Deitel, Harvey Deitel, PHI

Reference Books :

1. “Programming with Java” T.V.Suresh Kumar, B.Eswara Reddy, P.Raghavan Pearson Edition.
2. “Core Java”, Nageswar Rao, Wiley Publishers.
3. “Thinking in Java”, Bruce Eckel, Pearson Education.
4. “Programing In java”, Malhotra, Oxford University Press
5. “Head First Java”, Kathy Sierra, Bert Bates, O’Reilly
6. “SCJP – Sun Certified Programmer for Java Study guide” – Kathy Sierra, Bert Bates, McGrawHill
7. “Java in Nutshell”, David Flanagan, O’Reilly
8. “Core Java : Volume I – Fundamentals, Cay S. Horstmann, Gary Cornell, The Sun Micro Systems Press

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuram

Department of Computer Science & Engineering

B.Tech. II – II Sem. (C.S.E)	L	T	C
	3	1	3

Formal Languages and Automata Theory

Course Objective

The course aims to introduce the basic methods and conclusions of the Theory of Computation. At the end of the course, students learn to apply these methods to problems from different fields and be guided by the results in searching for computational solutions to the problems.

1. Understand formal definitions of machine models.
2. Classify machines by their power to recognize languages.
3. Understanding of formal grammars, analysis
4. Understanding of hierarchical organization of problems depending on their complexity
5. Understanding of the logical limits to computational capacity

Understanding of undecidable problems

Unit I

Preliminaries: Sets, Relations and functions, Methods of proof, Graphs, Languages: Basic Concepts.
Grammars: Definitions and classifications of grammar, Ambiguity, Simplification of CFGs, Normal forms.

Unit II

Finite State Automata: DFSA, NFSA, Regular Expressions
Finite State Automata: Characterization, Properties and decidability: FSA Regular Grammars, Pumping lemma for regular sets, Closure Properties, Decidability theorems.
Finite State Automata with Output and Minimization: Myhill-Nerode theorem, Finite Automata with output.
Variants of Finite Automata: Two way finite automata, Multi head Finite Automata.
UNIT III

Pushdown Automata: The Pushdown Automation, Equivalence between acceptance by empty store and acceptance by Final State, Equivalence of CFG and PDA

CFG-Properties and Parsing: Pumping Lemma for CFL, Closure Properties for CFL, Decidability results for CFL, Sub families of CFL.
UNIT IV

Turing Machines: Turing Machine as a acceptor, Turing Machine as a computing device, Techniques for Turing Machine Construction.
Variations of Turing Machine: Generalized Versions, Restricted Turing Machines, Turing Machines as Enumerated, Equivalence between Turing Machines and Type Zero Languages, Linear Bounded Automata.

UNIT V

Universal Turing Machine and Decidability: Encoding and Enumeration of Turing Machines,

Recursive and Recursively Enumerable Sets, Universal Turing Machines, Problems, Instances and Languages, Rice's Theorem, Reduction of Problems to show undecidability, Post's correspondence problem, Computable functions.
Time and Space Complexity: The RAM model, Time and Tape Complexity of Turing Machines.
New Models of Computations: DNA Computing, Membrane Computing

Text Books:

1. "Introduction to Formal Languages, Automata Theory and Computation", Kamala Krithivasan, Rama R, PEARSON.

References Books:

1. "Introduction to Automata Theory, Languages, and Computation", Third Edition, John E.Hopcroft, Rajeev Motwani, Jeffery D. Ullman, PEARSON.
2. "Introduction To Languages And The Theory of Computation", John C Martin, The McGraw-Hill Companies, Third Edition. (TATA McGRAW HILL)
3. "Introduction to Automata Theory, Formal Languages and Computation", Shyamalendu kandar, PEARSON.
4. Theory of Computation", Vivek Kulkarni, OXFORD.
5. "Theory of computer Science Automata, Languages and Computation", K.L.P. Mishra, N. Chandrasekaran, PHI, Third Edition.
6. Formal Languages and Automata Theory", C.K. Nagpal, OXFORD.
7. "Fundamentals of the Theory of Computation, Principles and Practice", Raymond Greenlaw, H. James Hoover, MK(MORGAN KAUFMANN)

JNTUA College Of Engineering (Autonomous):: Anantapuram
Department of Computer Science & Engineering

B.Tech. II – II Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Principles of Programming Languages

Course Objective

- To provide an exposure to core concepts and principles in contemporary programming languages
- to explore various important programming methodologies, such as functional programming, logic programming, programming with abstract data types, and object-oriented programming
- to learn the fundamental concepts that underlies in most programming Languages
- To provide conceptual understanding of High level language design and implementation.
- To introduce the power of scripting 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, denotational 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. "Concepts of Programming Languages", Robert .W. Sebesta 10/e, Pearson Education,2008.
2. "Programming Language Design Concepts", D. A. Watt, Wiley dreamtech,rp-2007.

Reference Books :

1. "Programming Languages", 2nd Edition, A.B. Tucker, R.E. Noonan, TMH.
2. "Programming Languages", K. C.Louden, 2nd Edition, Thomson, 2003.
3. "LISP", Patric Henry Winston and Paul Horn, Pearson Education.
4. "Programming in Prolog", W.F. Clocksin,& C.S.Mellish, 5th Edition, Springer.
5. "Programming Python", M.Lutz, 3rd Edition, O'reilly, SPD, rp-2007.
6. "Core Python Programming", Chun, II Edition, Pearson Education, 2007.
7. "Guide to Programming with Python", Michael Dawson, Thomson, 2008

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuram
Department of Computer Science & Engineering

B.Tech. II – II Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Design and Analysis Of Algorithms

Course Objective

- To know the importance of the complexity of a given algorithm.
- To study various algorithmic design techniques.
- To utilize data structures and/or algorithmic design techniques in solving new problems.
- To know and understand basic computability concepts and the complexity classes P, NP, and NP-Complete.
- To study some techniques for solving hard problems
- Analyze the complexity of the algorithms
- Use techniques divide and conquer, greedy, dynamic programming, backtracking, branch and bound to solve the problems.
- Identify and analyze criteria and specifications appropriate to new problems, and choose the appropriate algorithmic design technique for their solution.

Unit - I :
Algorithms, Pseudo code for expressing algorithms, performance analysis:- space complexity and time complexity, Asymptotic notations:- Big Oh notation, Omega Notation, Theta notation, amortized complexity

Unit – II:
Divide and Conquer: General method, applications: Defective Chessboard, Binary Search, Quick Sort and its time complexity, Merge Sort and Stressen's matrix multiplication.
Greedy Method: General method, applications: job sequencing with deadlines, knapsack problem, single source shortest path, Minimum cost Spanning Trees

Unit – III :
Dynamic programming: General Method, applications: Single Source Shortest path, 0/1 knapsack, All Pairs shortest path, travelling sales person problem and reliability design

Unit – IV :
Back tracking: General Method, applications: 8 – queens problem, sum of subsets problem, graph coloring and hamiltonian cycles, Knapsack Problem.
Branch and Bound: General method, applications: travelling sales person, 0/1 knapsack problem, LC Branch and Bound and FIFO Branch and Bound

Unit – V :
NP – Hard and NP – Complete Problems: NP Hardness, NP Completeness, Consequences of being in P, Cook's Theorem, Reduction Source Problems, Reductions: Reductions for some known problems

Text Books :

1. "Fundamentals of Computer Algorithms", Ellis Horowitz, S. Satraj Sahani and Rajasekhran, University Press.
2. "Design and Analysis of Algorithms", Parag Himanshu Dave, Himanshu Bhalchandra Dave,

Second Edition, Pearson Education

Reference Books :

1. “Introduction to Algorithms”, secondedition,T.H.Cormen,C.E.Leiserson, R.L.Rivest,and C.Stein,PHI Pvt. Ltd./ Pearson Education
2. “Introduction to Design and Analysis of Algorithms A strategic approach”, R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai, Mc Graw Hill.
3. “Data structures and Algorithm Analysis in C++”, Allen Weiss, Second edition, Pearson education.
4. “Design and Analysis of algorithms”, Aho, Ullman and Hopcroft,Pearson education.
5. “Algorithms” – Richard Johnson baugh and Marcus Schaefer, Pearson Education

JNTUA College Of Engineering (Autonomous):: Anantapuram
Department of Computer Science & Engineering

B.Tech. II – II Sem. (C.S.E)	L	T	C
	2	0	0

HUMAN VALUES AND PROFESSIONAL ETHICS

OBJECTIVE

- To create an awareness on Engineering Ethics and Human Values.
- To instill Moral and Social Values and Loyalty
- To appreciate the rights of Others

Students will be able to:

- identify and analyze an ethical issue in the subject matter under investigation or in a relevant field
- identify the multiple ethical interests at stake in a real-world situation or practice
- articulate what makes a particular course of action ethically defensible
- assess their own ethical values and the social context of problems
- identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects
- demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work
- integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research

Unit I: HUMAN VALUES

Morals, Values and Ethics-Integrity-Work Ethic-Service learning – Civic Virtue – Respect for others – Living Peacefully – Caring – Sharing – Honesty - Courage- Co Operation – Commitment – Empathy –Self Confidence Character – Spirituality.

Unit II: ENGINEERING ETHICS

Senses of 'Engineering Ethics- Variety of moral issued – Types of inquiry – Moral dilemmas – Moral autonomy –Kohlberg's theory- Gilligan's theory- Consensus and controversy – Models of professional roles- Theories about right action- Self interest - Customs and religion –Uses of Ethical theories – Valuing time –Co operation – Commitment.

Unit III :ENGINEERING AS SOCIAL EXPERIMENTATION

Engineering As Social Experimentation – Framing the problem – Determining the facts – Codes of

Ethics – Clarifying Concepts – Application issues – Common Ground - General Principles – Utilitarian thinking respect for persons.

UNIT IV: ENGINEERS RESPONSIBILITY FOR SAFETY AND RISK

Safety and risk – Assessment of safety and risk – Risk benefit analysis and reducing risk- Safety and the Engineer- Designing for the safety- Intellectual Property rights(IPR).

UINIT V: GLOBAL ISSUES

Globalization – Cross culture issues- Environmental Ethics – Computer Ethics – Computers as the instrument of Unethical behavior – Computers as the object of Unethical acts – Autonomous Computers- Computer codes of Ethics – Weapons Development - Ethics and Research – Analyzing Ethical Problems in research – Intellectual property Rights(IPR)

Text Books

1. Engineering ethics includes human values by M.Govindarajan, s. nataraja and vssenthilkumar PHI.2009.

2. "Engineering Ethics" by Harris, Pritchard and Rabins, CENGAGE Learning, India Edition, 2009.

3. "Ethics in Engineering" by Mike W. Martin and Roland Schinzinger – Tata McGraw-Hill– 2003.

4. "Professional Ethics and Morals" by Prof.A.R.Aryasri, DharanikotaSuyodhana-Maruthi Publications.

5. "Professional Ethics and Human Values" by A.Alavudeen, R.KalilRahman and M.Jayakumaran-Laxmi
Publications.

7. "Professional Ethics and Human Values" by Prof.D.R.Kiran-

JNTUA College Of Engineering (Autonomous):: Anantapuram
Department of Computer Science & Engineering

B.Tech. II – II Sem. (C.S.E)	**T**	**P**	**C**
	0	**3**	**2**

Database Management Systems Lab

Course Objective

- To create database and query it using SQL queries, design forms and generate reports.
- Learn to use integrity constraints, referential integrity constraints, triggers, assertions
- Design databases
- Retrieve information from data bases
- Use procedures to program the data access and manipulation
- Create user interfaces and generate reports

List of Experiments:

1. Practice session: Students should be allowed to choose appropriate DBMS, install it, configure it and start working on it: Create sample tables, execute some queries, use SQLPLUS features, use PL/SQL features like cursors.

2. A college consists of number of employees working in different departments. In this context, create two tables **employee** and **department**. Employee consists of columns empno, empname, basic, hra, da, deductions, gross, net, date-of-birth. The calculation of hra,da are as per the rules of the college. Initially only empno, empname, basic have valid values. Other values are to be computed or updated later. Another table department is maintained containing deptno, deptname, description columns. Deptno is the primary key in department table and referential integrity constraint exists between employee and department tables. Perform the following operations on the above database:

    - Create tables department and employee with required constraints.
    - Initially only the few columns (essential) are added. Add the remaining columns separately by using appropriate SQL command
    - Basic column should not be null
    - Add constraint that basic cannot be less than 5000.
    - Calculate hra,da,gross and net by using PL/SQL program.
    - Whenever salary is updated and its value becomes less than 5000 a trigger has to be raised preventing the operation
    - The assertions are: hra should not be less than 10% of basic and da should not be less than 50% of basic.
    - The percentage of hra and da are to be stored separately
    - When the da becomes more than 100% of the basic a message has to be generated and with user permission da has to be merged with basic
    - Empno should be unique and has to be generated automatically
    - If the employee is going to retire in a particular month, automatically a message has to be generated
    - The default value for date-of-birth is 1 jan, 1970
    - When the employees called daily-wagers are to be added the constraint that salary should be greater than or equal to 5000 should be dropped
    - Display the information of the employees and departments with description of the fields

- Display the average salary of all the departments
- Display the average salary department wise
- Display the maximum salary of each department and also all departments put together
- Commit the changes whenever required and rollback if necessary
- Use substitution variables to insert values repeatedly
- Assume some of the employees have given wrong information about date-of-birth. Update the corresponding tables to change the value
- Find the employees whose salary is between 5000 and 10000 but not exactly 7500
- Find the employees whose name contains 'en'
- Try to delete a particular deptno. What happens if there are employees in it and if there are no employees
- Create alias for columns and use them in queries
- List the employees according to ascending order of salary
- List the employees according to ascending order of salary in each department
- Use && wherever necessary
- Amount 6000 has to be deducted as CM relief fund in a particular month which has to be accepted as input from the user. Whenever the salary becomes negative it has to be maintained as 1000 and the deduction amount for those employees is reduced appropriately
- The retirement age is 60 years. Display the retirement day of all the employees
- If salary of all the employees is increased by 10% every year, what is the salary of all the employees at the retirement
- Find the employees who are born in leap year
- Find the employees who are born on feb 29
- Find the departments where the salary of atleast one employee is more than 20000
- Find the departments where the salary of all the employees is less than 20000
- On first January of every year a bonus of 10% has to be given to all the employees. The amount has to be deducted equally in the next 5 months
- As a designer identify the views that may have to be supported and create views
- As a designer identify the PL/SQL procedures necessary and create them using cursors
- Use appropriate Visual programming tools like oracle forms and reports, visual basic etc to create user interface screens and generate reports

Note: as a designer identify other operations required and add to the above list. The above operations are not in order. Order them appropriately. Use SQL or PL/SQL depending on the requirement.

3. Students may be divided into batches and the following experiments may be given to them to better understand the DBMS concepts. Students should gather the required information, draw ER diagrams, map them to tables, create tables, triggers, procedures, execute queries, create user interfaces, and generate reports.

    - Student information system
    - APSRTC reservation system
    - Hostel management
    - Library management
    - Indian Railways reservation
    - Super market management
    - Postal system
    - Banking system

- Courier system
- Publishing house system

Reference Books :

1. “Learning Oracle SQL and PL/SQL”, Rajeeb C. Chatterjee, PHI.
2. “Oracle Database 11g PL/SQL Programming”, M.Mc Laughlin,TMH.
3. “Introduction to SQL”, Rick F.Vander Lans, Pearson education.
4. “Oracle PL/SQL”, B.Rosenzweig and E.Silvestrova, Pearson education

JNTUA College Of Engineering (Autonomous):: Anantapuram
Department of Computer Science & Engineering

B.Tech. II – II Sem. (C.S.E)	**T**	**P**	**C**
	0	**3**	**2**

Java Programming Lab

Course Objective/Outcomes

- To introduce java compiler and eclipse platform
- To impart hand on experience with java programming

Note:

1. **IDEs are not mandatory, encourage the use of Eclipse or Netbean platform**
2. **The list suggests the minimum program set. Hence, the concerned staff is requested to add more problems to the list as needed**

Week-1:

1. Use Eclipse or Netbean platform and acquaint with the various menus. Create a test project, add a test class and run it. See how you can use auto suggestions, auto fill. Try code formatter and code refactoring like renaming variables, methods and classes. Try debug step by step with java program to find prime numbers between 1 to n.

Week-2:

1. Write a Java program that prints all real and imaginary solutions to the quadratic equation ax2 + bx + c = 0. Read in a, b, c and use the quadratic formula.
2. Write a Java program for sorting a given list of names in ascending order
3. Write a java program to accept a string from user and display number of vowels, consonants, digits and special characters present in each of the words of the given text.

Week -3:

1. Write a java program to make rolling a pair of dice 10,000 times and counts the number of times doubles of are rolled for each different pair of doubles.
   Hint: Math.random()
2. Write java program that inputs 5 numbers, each between 10 and 100 inclusive. As each number is read display it only if it's not a duplicate of any number already read display the complete set of unique values input after the user enters each new value.
3. Write a java program to read the time intervals (HH:MM) and to compare system time if the system time between your time intervals print correct time and exit else try again to repute the same thing. By using StringToknizer class

Week-4:

1. Write a java program to split a given text file into n parts. Name each part as the name of the original file followed by .part<n> where n is the sequence number of the part file.
2. Write java program to create a super class called Figure that receives the dimensions of two dimensional objects. It also defines a method called area that computes the area of an object. The program derives two subclasses from Figure. The first is Rectangle and second is Triangle. Each of the sub class overridden area() so that it returns the area of a rectangle and a triangle respectively.
3. 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

Week-5:

1. Write a Java program that correctly implements producer consumer problem using the

concept of inter thread communication

2. Write a java program to find and replace pattern in given file,
3. Use inheritance to create an exception super class called EexceptionA and exception sub class ExceptionB and ExceptionC, where ExceptionB inherits from ExceptionA and ExceptionC inherits from ExceptionB. Write a java program to demonstrate that the catch block for type ExceptionA catches exception of type ExceptionB and ExceptionC

Week-6:

1. Write a java program to convert an ArrayList to an Array.
2. Write a Java Program for waving a Flag using Applets and Threads
3. Write a Java Program for Bouncing Ball (The ball while moving down has to increase the size and decrease the size while moving up)

Week-7:

1. Write a Java Program for stack operation using Buttons and JOptionPane input and Message dialog box.
2. Write a Java Program to Addition, Division, Multiplication and substraction using JOptionPane dialog Box and Textfields.

Week-8:

1. Write a Java Program for the blinking eyes and mouth should open while blinking.
2. Implement a Java Program to add a new ball each time the user clicks the mouse. Provided a maximum of 20 balls randomly choose a color for each ball.

Week-9:

1. Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are eparated by commas. Write a java program to display the table using Jtable component
2. 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 ArithmeticException Display the exception in a message dialog box.

Week-10:

1. Write a Java Program to implement the opening of a door while opening man should present before hut and closing man should disappear.
2. Write a Java code by using JtextField to read decimal value and converting a decimal number into binary number then print the binary value in another JtextField

Week-11:

1. 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.
2. Write a Java program for handling mouse events.

Week-12:

1. Write a java program establish a JDBC connection, create a table student with properties name, register number, mark1,mark2, mark3. Insert the values into the table by using the java and display the information of the students at front end.

Text Books :

1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI
2. Java The Complete Reference" by Herbert Schildt, TMH, 8th Edition

Reference Books :

1. Introduction to Java programming, Sixth edition, Y.Daniel Liang, Pearson Education
2. Programming in java Sachine

3. Big Java, 2nd edition, Cay Horstmann, Wiley Student Edition, Wiley India Private Limited.
4. Introduction to Programming with Java, J.Dean & R.Dean, McGraw Hill education.
5. Java Programming, D S Malik, cengage learning, India Edition

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu
Department of Computer Science & Engineering

B.Tech. III – I Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Operating Systems

Course Objective

- To make the students understand the basic operating system concepts such as processes, threads, scheduling, synchronization, deadlocks, memory management, file systems, protection and security.
- To get acquaintance with the class of abstractions afford by general purpose operating systems that aid the development of user applications

Course Outcomes

- Understand what makes a computer system function and the primary PC components.
- Understand past and current trends in computer technology.
- Use basic software applications.
- Add functionality to the exiting operating systems
- Design new operating systems

Unit - I :

Introduction: Operating System Services, User and Operating System Interface, System Calls, Types of System Calls, System Programs, Operating System Design and Implementation, Operating System Structure.
Process Management: Process Concept, Process Scheduling, Operations on Process, Inter process Communications, Examples of IPC Systems, Communication in Client Server Systems.

Unit – II:

Threads: Multi core programming, multithread models, Thread Libraries, Implicit Threading, Threading Issues, Operating System Examples.
Process Synchronization: The Critical Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization, Monitors, Synchronization Examples.
CPU Scheduling: Scheduling-Criteria, Scheduling Algorithms, Thread Scheduling, Multiple-Processor Scheduling.

Unit – III :

Memory Management: Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the page table.
Virtual memory: Demand Paging, Copy-on-Write, Page-Replacement, Allocation of Frames, Thrashing, Memory Mapped Files.

Deadlocks: System Model, Deadlock Characterization, Methods of Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

Unit – IV :

Mass-storage structure: Overview of Mass-Storage Structure, RAID Structure, Stable-Storage Implementation.
File system Interface: Access Methods, File System Mounting, File Sharing, Protection.
File system Implementation: File-system Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management, Recovery.

Unit – V :

Protection: Goals of Protection, Principles of Protection, Domain of Protection, Access Matrix.
Security: The Security Problem, Program Threats, Implementing Security Defenses, Firewalling to Protect Systems and Networks, Computer–Security Classifications
Case Studies: The Linux System, Windows 7

Text Books :

1. "Operating System Concepts", Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Ninth edition, John Wiley.

Reference Books :

1. "Operating Systems: Internals and Design Principles", Stallings, Sixth Edition–2009,
2. PearsonEducation
3. "Modern Operating Systems", Andrew S Tanenbaum, Second Edition, PHI.
4. "Operating Systems", S.Haldar, A.A.Aravind, Pearson Education.
5. "Principles of Operating Systems", B.L.Stuart, Cengage learning, India Edition.
6. "Operating Systems", A.S.Godbole, Second Edition, TMH.
7. "An Introduction to Operating Systems", P.C.P. Bhatt, PHI.
8. "Operating Systems", G.Nutt, N.Chaki and S.Neogy, Third Edition, Pearson Education.
9. "Operating Systems", R.Elmasri, A,G.Carrick and D.Levine, McGraw Hill

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – I Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Compiler Design

Course Objective

This course is a *de facto* capstone course in Computer Science, as it combines skills in software design, programming, data structures and algorithms, theory of computing, documentation, and machine architecture to produce a functional compiler.

- Realize that computing science theory can be used as the basis for real applications
- Introduce the major concept areas of language translation and compiler design.
- Learn how a compiler works
- Know about the powerful compiler generation tools and techniques, which are useful to the other non-compiler applications
- Know the importance of optimization and learn how to write programs that execute faster

Course Outcomes

- Able to design a compiler for a simple programming language
- Able to use the tools related to compiler design effectively and efficiently
- Can write an optimized code

Unit - I :

Introduction: Language processors, Phases of a compiler, Pass and phase, Bootstrapping, Compiler construction tools, Applications of compiler technology, Programming language basics

Lexical Analysis: Role and Responsibility, Input buffering, Specification of tokens, Recognition of tokens, LEX tool, Design of a Lexical Analyzer generator

Unit – II:

Syntax Analysis: Role of the parser, Context Free Grammars- Definition, Derivations, Parse trees, Ambiguity, Eliminating ambiguity, Left recursion, Left faltering.

TOP Down Parsing: Recursive descent parsing, Non-recursive predictive parsing, LL(1) grammars, Error recovery in predictive parsing.

Bottom Up Parsing: Handle pruning, Shift-Reduce parsing, Conflicts during shifts- reduce parsing, SLR Parsing, Canonical LR(1) parsers, LALR parsers, Using ambiguous grammars, YACC tool.

Unit – III :

Syntax Directed Translation: Syntax Directed Definitions, Evaluation orders for SDD's, Application of SDT, SDT schemes, Implementing L-attribute SDD's.

Intermediate Code Generation: Need for intermediate code, Types of intermediate code, Three address code, Quadruples, Triples,Type expressions, Type equivalence, Type checking, Translation of expressions, control flow statements, switch statement, procedures, back patching

Unit – IV :

Run Time Storage Organization: Scope and Life time of variable, Information associated with symbols in symbol table, Data Structures for symbol Table, Static vs dynamic storage allocation, Stack allocation of space, Access to non-local data on stack, Heap management, Introduction to garbage collection

Optimization: Need and objective of optimization, Places of optimization, Optimization at user level, Construction of Basic blocks and Processing, Data Flow analysis using flow graph, Data flow equations for blocks with back ward flow control, Principles source of optimization and transformations, Alias, Loops in flow graphs, Procedural optimization, Loop optimization

Unit – V :

Code Generation: Issues in code Generation, Target machine architecture, Subsequent Use information, Simple code generator, Register allocation, DAG representation of basic blocks, Code generation from intermediate code, Peephole optimization, Code scheduling

Text Books :

1. "Compilers Principles, Techniques and Tools", Second Edition, Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman., Pearson.
2. "Compiler Design", K. Muneeswaran., Oxford University Press, 2012

Reference Books :

8. "Compiler Construction", K.V.N Sunitha, Pearson, 2013
9. "Engineering A Compiler", Second Edition, Keith D. Cooper & Linda Torczon., MK(Morgan

Kaufmann) (ELSEVIER)
10. “Compilers Principles and Practice”, Parag H. Dave, Himanshu B. Dave.,PEARSON
11. “Compiler Design”, SandeepSaxena, Rajkumar Singh Rathore., S.Chand publications
12. “Compiler Design”, SantanuChattopadhyay., PHI
13. “Principals of Compiler Design”, Nadhni Prasad, Elsevier

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – I Sem. (C.S.E)	L	T	C
	3	1	3

Unix and Shell Programming

Course Objectives:

1. Discuss the development of Unix system over time.
2. State how the shell functions at the user interface and command line interpreter.
3. Modify built-in shell variables and create and use user-defined shell variables.
4. Use I/O redirection, pipes, quoting, and filename expansion mechanisms.
5. Create structured shell programming which accept and use positional parameters and exported variables.
6. Use shell flow control and conditional branching constructs (while, for, case, if, etc.)
7. Create shell programs which process interrupts, pass signals, invoke sub-shells and functions, and trap signals.

Course Outcomes:

1. The course delegates will have the fundamental skills required to write simple and complex Shell scripts to automate jobs and processes in the Unix environment.
2. Identify and use UNIX/Linux utilities to create and manage simple file processing operations, organize directory structures with appropriate security, and develop shell scripts to perform more complex tasks.
3. Effectively use the UNIX/Linux system to accomplish typical personal, office, technical, and software development tasks.
4. Monitor system performance and network activities.

Unit I

Introduction: Operating System, History of UNIX, Overview and Features of Unix System, Structure of Unix System, Unix Environment. **Unix File System**: Introduction of Files, Organization of File Systems, Accessing File Systems, Structure of File Systems. **Unix Commands**: Basic Commands, Advanced Unix Commands: File Access Permissions, Pipe Operator, cut, paste, wc, sort, head, tail, diff, cmp, uniq, comm, time, Conversions between DOS and Unix, man.

Unit II

File management and Compression Techniques: Managing and Compressing Files, Computer Devices, Disk related Commands, Compression and Uncompressing Files, Important Unix System Files, Shell Variables, Export of Local and Global Shell Variables. **Manipulating Processes and Signals**: Process Basics, Processes States and Transitions, Zombie Process, Context switching, Threads, ps-status of Process.

Unit III

System calls: Introduction, File-related System calls (open, create, read, write, lseek, close, mknod, link and unlink, access, and chown, chmod), Directory Handling System calls (mkdir, rmdir, chdir, opendir, readdir, telldir, closedir). Porcess related System calls (exec, fork, wait,exit).
Editors in Unix: introduction, Stream editor, Emacs Editor.

Unit IV

AWK Script: AWK Command, print, printf, Displaying Content of Specified Patterns, Comparison Operators, Compound Expressions, Arithmetic Operators, Begin and end Sections, User-defined Variables, if else Statement, Built-in Variables, Changing Input Filed Separator, Functions, Loops, Getting Input from User, Search and Substitute Functins, Copying results into Another file. **Bourne Shell**: Introduction, beginning Bourne Shell Scripting, Writing Shell Scripts, Command Line Parameters, read, for Loop, While Loop, if Statement, Bourne Shell Commands.

Unit V

Interprocess Communications: Interprocess Communication, Synchronization, Filters.

Unix System Administration and Networking: Unix Booting Procedure, Mounting Unix File System, Unmounting Unix File System, Managing User Accounts, Networking Tools, mail Command, Distributed File System, Firewalls, Backup and Restore.

Text Books:

1. "UNIX and SHELL Programming", B.M. HARWANI, OXFORD UNIVERSITY PRESS.

References:

1. "UNIX and Linux System Administration Handbook", Evi Nemeth, Garth Snyder, Trent R. Hein and Ben Whaley, PHI
2. "Essential Linux Administration: A Comprehensive Guide for Beginners", Chuck Easttom, Cengage Learning
3. "The Linux Programming Interface: A Linux and UNIX System Programming Handbook", Michael Kerrisk, No Starch Press
4. "A Practical Guide to Linux Commands, Editors, and Shell Programming", 3rd Edition, Mark G. Sobell, PHI
5. "Advanced Programming in the UNIX Environment", 3rd Edition, W. Richard Stevens and Stephen A. Rago, Addison-Wesley professional
6. "UNIX Network Programming", W. Richard Stevens, PHI
7. "Unix: *The Ultimate Guide",* Sumitabha Das, Tat Mcgraw-Hill Edition, Indian reprint 2012

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – I Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Software Engineering

Course Objectives

- To understand the software life cycle models.
- To understand the software requirements and SRS document.
- To understand the importance of modeling and modeling languages.
- To design and develop correct and robust software products.
- To understand the quality control and how to ensure good quality software.
- To understand the planning and estimation of software projects.
- To understand the implementation issues, validation and verification procedures.
- To understand the maintenance of software

Course Outcomes

- Define and develop a software project from requirement gathering to implementation.
- Obtain knowledge about principles and practices of software engineering.
- Focus on the fundamentals of modeling a software project.
- Obtain knowledge about estimation and maintenance of software systems

Unit - I :

Software and Software Engineering: The Nature of Software, The Unique Nature of WebApps, Software Engineering, Software Process, Software Engineering Practice, Software Myths.

Process Models: A Generic Process Model, Process Assessment and Improvement, Prescriptive Process Models, Specialized Process Models, The Unified Process, Personal and Team Process Models, Process Terminology, Product and Process.

Unit – II:

Requirements Analysis And Specification: Requirements Gathering and Analysis, Software Requirement Specification (SRS), Formal System Specification.

Software Design: Overview of the Design Process, How to Characterise of a Design?, Cohesion and Coupling, Layered Arrangement of Modules, Approaches to Software Design.

Unit – III :

Function-Oriented Software Design: Overview of SA/SD Methodology, Structured Analysis, Developing the DFD Model of a System, Structured Design, Detailed Design, Design Review, Over view of Object Oriented design.

User Interface Design: Characteristics of Good User Interface, Basic Concepts, Types of User Interfaces, Fundamentals of Component-based GUI Development, A User Interface Design Methodology.

Unit – IV :

Coding And Testing: Coding, Code Review, Software Documentation, Testing, Unit Testing, Black-Box Testing, White-Box Testing, Debugging, Program Analysis Tool, Integration Testing, Testing Object-Oriented Programs, System Testing, Some General Issues Associated with Testing.

Unit – V :

Software Reliability And Quality Management: Software Reliability, Statistical Testing, Software Quality, Software Quality Management System, ISO 9000, SEI Capability Maturity Model.

Computer Aided Software Engineering: Case and its Scope, Case Environment, Case Support in Software Life Cycle, Other Characteristics of Case Tools, Towards Second Generation CASE Tool, Architecture of a Case Environment.

Software Maintenance: Characteristics of Software Maintenance.

Software Reuse: what can be Reused? Why almost No Reuse So Far?, Basic Issues in Reuse Approach, Reuse at Organisation Level.

Text Books :

1. Software Engineering A practitioner's Approach, Roger S. Pressman, Seventh Edition McGrawHill International Edition.
2. Fundamentals of Software Engineering, Rajib Mall, Third Edition, PHI.

Reference Books :

1. Software Engineering, Ian Sommerville, Ninth edition, Pearson education.
2. Software Engineering : A Primer, Waman S Jawadekar, Tata McGraw-Hill, 2008
3. Software Engineering, A Precise Approach, PankajJalote, Wiley India,2010.
4. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
5. Software Engineering1: Abstraction and modeling, Diner Bjorner, Springer International edition, 2006.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu
Department of Computer Science & Engineering

B.Tech. III – I Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Microprocessors & Interfacing

Course Objective

- Study the instruction set of 8086 microprocessor and its architecture
- Learn assembling language programming using 8086 microprocessor
- Interfacing 8051, 8255, 8237, and 8259

Course Outcomes

- Program the 8086 microprocessor
- Interface the 8086 microprocessor with various devices and program them

Unit - I :

Microprocessors-Evolution and Introduction: Microprocessors and Micro Controllers, Microprocessor based system, Origin of Microprocessor, Classification of Microprocessors, Types of Memory, I/O Devices, Technology Improvements Adapted to Microprocessors and Computers, Introduction to 8085 processor, Architecture of 8085, Microprocessor instructions, classification of instructions, Instruction set of 8085. Intel 8086 Microprocessor architecture, Features, and Signals: Architecture of 8086, Accessing memory locations, PIN details of 8086

Unit – II:

Addressing Modes, Instruction Set and Programming of 8086: Addressing modes in 8086, Instruction set of 8086, 8086 Assembly Language Programming, Modular Programming

Unit – III :

8086 Interrupts: Interrupt types in 8086, Processing of Interrupts by 8086, Dedicated interrupt types in 8086, Software interrupts-types 00H-FFH, Priority among 8086 interrupts, Interrupt service routines, BIOS interrupts or functional calls, Interrupt handlers, DOS services-INT 21H, System calls-BIOS services.

Memory and I/O Interfacing: Physical memory organization in 8086, Formation of system bus, Interfacing RAM and EPROM chips using only logic gates, Interfacing RAM/ EPROM chips using decoder IC and logic gates, I/O interfacing, Interfacing 8-bit input device with 8086, Interfacing output device using 8086, Interfacing printer with 8086, Interfacing 8-bit and 16-bit I/O devices or ports with 8086, Interfacing CRT terminal with 8086.

Unit – IV :

Features and Interfacing of programmable devices for 8086 systems: Intel 8255 p[programmable peripheral interface, Interfacing switches and LEDS, Interfacing seven segment displays, Traffic light control, Interfacing analog to digital converters, Intel Timer IC 8253, Introduction to serial communication, 8259 programmable controller, 8237 DMA controller

Unit – V :

Introduction to 8051 Micro controllers: Intel's MCS-51 series micro controllers, Intel 8051 architecture, Memory organization, Internal RAM structure, Power control in 8051, Stack operation.

8051 Instruction Set and Programming: Introduction, Addressing modes of 8051, Instruction set of 8051**,**

Hardware features of 8051: Introduction, Parallel ports in 8051, External memory interfacing in 8051, Timers, Interrupts, Serial ports.

Interfacing Examples: Interfacing 8255 with 8051, Interfacing of push button switches and LEDS,

2013-2014

Interfacing of seven segment displays

Text Books :

1. “Microprocessor and Interfacing 8086,8051, 8096 and advanced processors”, Senthil Kumar, Saravanan, Jeevanathan, Shah, Oxford Publishers, 2012.
2. “The X86 Microprocessors”, Lyla B. Das. Pearson, 2012.

Reference Books :

1. “Microprocessor and Interfacing: Programming and Hardware”, Douglas V.Hall, McGrawHill
2. “8086 microprocessor: Programming and Interfacing the PC”, Kenneth Ayala, Cengage Learning
3. “ARM system-on-chip architecture”, Steve Furber, Addison-Wesley Professional
4. “The Intel Microprocessors”, Barry B. Brey, Prentice Hall

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – I Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Advanced Computer Architecture

Course Objective

- Discuss the concept of parallel processing and the relationship between parallelism and performance
- Understand the organization of computer structures that can be electronically configured and reconfigured
- Discuss the performance advantages that multithreading can offer along with the factors that make it difficult to derive maximum benefits from this approach

Course Outcomes

- Realize Parallelism and Parallel architectures
- Ability to use Instruction Level Parallelism
- Ability to use Thread level parallelism

Unit - I :

Evolution of Computer Architecture, System Attributes to performance; Shared Memory Multiprocessors, Distributed Memory Multiprocessors, A Taxonomy of MIMD Computers; architecture of Vector Super computers, operational model of SIMD computer, PRAM models and PRAM variants

Conditions of Parallelism- data and resource dependencies, hardware and software parallelism, Program partitioning and Scheduling- grain sizes and latency, grain packing and scheduling, static multi processor scheduling, Program flow mechanisms- control flow vs data flow, demand driven mechanisms, comparison of flow mechanisms, System interconnect architectures- network properties and routing, static and dynamic connection networks

Unit – II:

Principles of scalable performances- performance metrics and measures- parallelism profile in programs, mean performance, efficiency, utilization and quality, benchmarks and performance measures, characteristics of parallel processing applications, Speed up performance laws- Amdahl's law, Gustafson's law, memory bounded speed up model, Scalability metrics and goals,

Bus systems- back plane bus specification, Addressing and Timing protocols, Arbitration, transaction and interrupt, IEEE future bus standard requirement set, Shared memory organizations- Interleaved memory organization, band width and fault tolerance, memory allocation schemes, Atomicity and

event ordering

Unit – III :

Linear Pipeline Processors- asynchronous and synchronous models, clocking and timing control, speedup, efficiency, and throughput, Non linear pipeline processors- reservation and latency analysis, collision free scheduling, pipeline schedule optimization, Instruction pipe line design- instruction execution phases, mechanisms for instruction pipelining, dynamic instruction scheduling, branch handling techniques, static arithmetic pipelines.

Hierarchical bus system, cross bar switch and multiport memory, multistage and combining networks, multistage and combining networks, The cache coherence problem, message passing mechanism- message routing schemes, deadlock virtual channels, flow control strategies, multicast routing algorithms

Unit – IV :

Vector processing principles- vector instruction types, vector access memory schemes, early super computers, Multi vector multiprocessors- performance directed design rules, architecture of Cray and MPP, Compound vector operations, vector loops and chaining, SIMD computer organizations

Unit – V :

Latency-hiding techniques- shared virtual memory, prefetching techniques, distributed coherent caches, scalable coherence interface, relaxed memory consistency, principles of multithreading and context switching policies,

MPD architecture, The Tera multiprocessor system, Data flow computer architecture

Text Books :

1. KAI Hwang & Naresh Jotwani, “Advanced Computer Architecture- Parallelism, Scalability, Programmability” Second Edition, Mc Graw Hill Publishing

Reference Books :

1. Hennessy Patterson, “Computer Architecture- A Quantitative Approach” Fifth Edition, Elsevier
2. Kai Hwang, “Advanced Computer Architecture- Parallelism, Scalability, Programmability”, TMH.
3. Computer Architecture, Concepts and Evolutions, Garrit A Blaauw, PEA

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu
Department of Computer Science & Engineering

B.Tech. III – I Sem. (C.S.E)	**L**	**P**	**C**
	0	**3**	**2**

Operating Systems and Shell Programming Lab

Course Objective

- To learn shell programming
- To use UNIX operating system for study of operating system concepts.
- To write the code to implement and modify various concepts in operating systems using Unix
- To learn implement CPU scheduling algorithms in Unix
- To practice basic administration skills

Course Outcomes

- Understand the role and responsibilities of a Unix system administrator
- Master CPU scheduling algorithms
- Be familiar with device interrupts and how they are used in an operating system implementation
- Students will gain knowledge in writing software routines, modules for implementing various concepts of operating systems

PART-A

1. Simulate the following CPU scheduling algorithms

a) Round Robin b) SJF c) FCFS d) Priority

2. Simulate all file allocation strategies

a) Sequential b) Indexed c) Linked

3. Simulate MVT and MFT

4. Simulate all File Organization Techniques

a) Single level directory b) Two level c) Hierarchical d) DAG

5. Simulate Bankers Algorithm for Dead Lock Avoidance

6. Simulate Bankers Algorithm for Dead Lock Prevention

7. Simulate all page replacement algorithms

a) FIFO b) LRU c) LFU Etc. …

8. Simulate Paging Technique of memory management

Reference Books :

1. "Operating System Concepts", Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Eighth edition, John Wiley.
2. "Operating Systems: Internals and Design Principles", Stallings, Sixth Edition–2009, PearsonEducation
3. "Modern Operating Systems", Andrew S Tanenbaum, Second Edition, PHI.
4. "Operating Systems", S.Haldar, A.A.Aravind, Pearson Education.
5. "Principles of Operating Systems", B.L.Stuart, Cengage learning, India Edition.

6. "Operating Systems", A.S.Godbole, Second Edition, TMH.
7. "An Introduction to Operating Systems", P.C.P. Bhatt, PHI.

PART-B

1. Practice session: practice use of some basic Linux commands. Document the syntax and semantics of those commands. Practice programs on shell variables, control statements etc.
2. Practice session: Study the features of Linux environment and submit a report on it.
3. Write a shell script that accepts a name from the user and displays whether it is a file, directory or something else.
4. Write a shell script that creates users
5. Write a shell script that searches for a given string in a file
6. Write a shell script that compiles all C files in your home directory and creates executable files
7. Write a shell script that given a filename as argument, deletes all even lines in a file
8. Implement the grep command in C language
9. Write a shell script that removes duplicate lines from a file
10. Write a shell script that enhances find command by adding error messages that explain why the command failed.
11. Write a shell script to backup files in a specified directory
12. Write a shell script that finds all links to a file
13. Write an awk script to count the number of lines in a file that do not contain vowels.
14. Write an awk script to find the number of characters, words and lines in a file.
15. Write C programs that illustrate communication between two unrelated processes using named pipe(FIFO File).
16. Write a C program in which a parent writes a message to a pipe and the child reads the message.
17. Write a C program (sender.c) to create a message queue with read and write permissions to write 3 messages to it with different priority numbers.
18. Write a C program (receiver.c) that receives the messages (from the above message queue and displays them.
19. Configure mail server and file server.
20. Write Client and Server programs in C for connection oriented communication between Server and Client processes using Unix Domain sockets to perform the following:Client process sends a message to the Server Process. The Server receives the message, reverses it and sends it back to the Client.The Client will then display the message to the standard output device.

Reference Books

1. "Unix and Shell programming", B.A.Forouzan and R.F.Gilberg, Cengage Learning.

2. "Beginning Linux Programming", 4th Edition, N.Matthew, R.Stones,Wrox, Wiley
3. "Advanced Unix Programming", N.B.Venkateswarulu, BS Publications.
4. "Unix and Shell Programming", M.G. Venkatesh Murthy, Pearson Education.
5. "Unix Shells by Example", 4th Edition, Elllie Quigley, Pearson Education.
6. "Sed and Awk", O.Dougherty&A.Robbins,2nd edition,SPD.
7. "Unix shell Programming", S.G.Kochan and P.Wood,3rd edition, Pearson Education.
8. "Shell Scripting, S.Parker, Wiley India Pvt. Ltd.
9. "Advanced Programming in the Unix Environment",2nd edition, W.R.Stevens and S.A.Rago, Pearson Education.
10. "Linux System Programming", Robert Love, O'Reilly, SPD

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – I Sem. (C.S.E)	**L**	**P**	**C**
	0	**3**	**2**

Compiler Design and Assembly Language Programming Lab

Course Objective

- To implement some of the functionality of the compiler
- To do programming using compiler related tools

Course Outcomes

- Develop compiler tools
- Design simple compiler

Complier Design Lab

1. Write a program to search for a given pattern in a set of files. It should support regular expressions. It should work similar to grep and fgrep of Linux environment.
2. Write programs for DFA, NFA.
3. Consider the following regular expressions:

   a) (0 + 1)* 1(0+1)(0+1)

   b) $(ab*c + (def)^+ + a*d^+e)^+$

   c) $((a + b)*(c + d)*)^+ + ab*c*d$

   Write separate programs for recognizing the strings generated by each of the regular expressions mentioned above (Using FA).
4. Given a text-file which contains some regular expressions, with only one RE in each line of the file. Write a program which accepts a string from the user and reports which regular expression accepts that string. If no RE from the file accepts the string, then report that no RE is matched.
5. Design a PDA for any given CNF. Simulate the processing of a string using the PDA and show the parse tree.

6. Design a Lexical analyzer for identifying different types of tokens used in C language.

   Note: The reserved keywords such as if, else, class, structetc must be reported as invalid identifiers. C allows identifier names to begin with underscore character too.
7. Simulate a simple desktop calculator using any lexical analyzer generator tool (LEX or FLEX).
8. Program to recognize the identifiers, if and switch statements of C using a lexical analyzer generator tool.
9. Consider the following grammar:

   S --> ABC

   A-->abA | ab

   B--> b | BC

   C--> c | cC

   Design any shift reduced parser which accepts a string and tells whether the string is accepted by above grammar or not.
10. Design a YACC program that reads a C program from input file and identify all valid C identifiers and for loop statements.
11. Program to eliminate left recursion and left factoring from a given CFG.
12. YACC program that reads the input expression and convert it to post fix expression.
13. YACC program that finds C variable declarations in C source file and save them into the symbol table, which is organized using binary search tree.
14. YACC program that reads the C statements from an input file and converts them into quadruple three address intermediate code

Reference Books :

1. "Compiler Design using FLEX and YACC", Das, PHI.
2. "Compiler Design in C", Holub, PHI.

Assembly Language Programming Lab

1. Write an ALP to find factorial of number.
2. The 8 data bytes are stored from memory location E000H to E007H. Write 8086 ALP to transfer the block of data to new location B001H to B008H.
3. Write a program to display string Computer Science & Engineering for 8086.

4. Write a program to reverse the given string for 8086.
5. Write a program to multiply 2 numbers (16-bit data) for 8086.
6. Sum of series of 10 numbers and store result in memory location total.
7. Write a program to find Largest No. in a block of data. Length of block is 0A. Store the maximum in location result.
8. Find number of times letter "e" exist in the string exercise, Store the count at memory
9. Write an assembly language program to count number of vowels in a given string.
10. Write an 8086 ALP which will input the user name from the keyboard. If the user is "Ramu-janu" it will output "The username is valid" else it will output "Invalid user name".

Reference Books :

1. "Microprocessor and Interfacing 8086,8051, 8096 and advanced processors", Senthil Kumar, Saravanan, Jeevanathan, Shah, Oxford Publishers, 2012.
2. "8086 microprocessor: Programming and Interfacing the PC", Kenneth Ayala, Cengage Learning
3. "The X86 Microprocessors", Lyla B. Das. Pearson, 2012.

JNTUA College Of Engineering (Autonomous):: Anantapuramu
Department of Computer Science & Engineering

B.Tech. III – II Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Computer Networks

Course Objective

- To provide students with a theoretical and practical base in computer networks issues.
- Students will be able purse their study in advanced networking courses.
- Students will able to Design, Implement, and Analyze simple Computer Networks.
- Students will able to identify, formulate, and solve network engineering problems.

Course Outcome:

- Open for research in Computer Networks.
- Use appropriate transmission media to connect to a computer network and Internet.
- Work on the open issues for their project.
- Start using the Internet effectively
- Able to design new protocols for computer network.

UNIT I

Introduction: Networks, Network Types, Internet History, Network Models: Protocol Layering, TCP/IP Protocol Suite, The ISO Model.

Introduction to physical layer: Data and Signals, Transmission impairment, Transmission media: Guided Media, Unguided Media, Switching: Introduction, Circuit Switched Networks, Packet switching.

UNIT II

Introduction to Data Link Layer: Introduction, Data link Layer Design Issues, Elementary Data Link Protocols, Sliding Window Protocols. Data link control: DLC Services, Data link layer protocols, HDLC, Point to Point Protocol, Media Access control: Random Access, Controlled Access, Channelization, Ethernet, Connecting devices and virtual LANs: Connecting Devices.

UNIT III

The Network Layer: Network layer design issues, Routing algorithms, Congestion control algorithms, Internetworking, The network layer in the Internet: IPV4 Addresses, IPV6, Internet Control protocol, OSPF, BGP, IP, ICMPv4, IGMP.

UNIT IV

The Transport Layer: The Transport Service, Elements of Transport Protocols, The internet transport protocols: UDP, TCP.

UNIT V

Introduction to Application Layer: Introduction, Client Server Programming, WWW and HTTP, FTP, e-mail, TELNET, Domain Name System.

Text Books:

1. "Computer Networks", 5th edition, 2010, Andrew S. Tanenbaum, Wetherall, Pearson.
2 "Data communications and networking" 5th edition, 2012, Behrouz A. Forouzan, TMH.

2013-2014

Reference Books:

1. "Internetworking with TCP/IP – Principles, protocols, and architecture- Volume 1, Douglas E. Comer, 5th edition, PHI
2. "Computer Networks", 5E, Peterson, Davie, Elsevier.
3. "Introduction to Computer Networks and Cyber Security", Chawan- Hwa Wu, Irwin, CRC Publications.
4. "Computer Networks and Internets with Internet Applications", Comer.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – II Sem. (C.S.E)	L	T	C
	3	1	3

Object oriented Analysis and Design Using UML

Course Objective:

- To understand how to solve complex problems
- Analyze and design solutions to problems using object oriented approach
- Study the notations of Unified Modeling Language

Learning Outcome:

- Ability to find solutions to the complex problems using object oriented approach
- Represent classes, responsibilities and states using UML notation
- Identify classes and responsibilities of the problem domain

UNIT I

Introduction: The Structure of Complex systems, The Inherent Complexity of Software, Attributes of Complex System, Organized and Disorganized Complexity, Bringing Order to Chaos, Designing Complex Systems, Evolution of Object Model, Foundation of Object Model, Elements of Object Model, Applying the Object Model.

UNIT II

Classes and Objects: Nature of object, Relationships among objects, Nature of a Class, Relationship among Classes, Interplay of Classes and Objects, Identifying Classes and Objects, Importance of Proper Classification, Identifying Classes and Objects, Key abstractions and Mechanisms.

UNIT III

Introduction to UML: Why we model, Conceptual model of UML, Architecture, Classes, Relationships, Common Mechanisms, Class diagrams, Object diagrams.

UNIT IV

Structural and Behavioral Modeling: Advance Classes, Advance Relationships, Interfaces, Types &Roles, Packages, Interactions, Use cases, Use case diagrams.

UNIT V

Advanced Behavioral and Architectural modeling: Activity diagrams, Events and Signals, State chart diagrams, Components and Component diagrams, Deployment & Deployment diagrams, Collaborations.

Text Books:

1. "Object- Oriented Analysis And Design with Applications", Grady BOOCH, Robert A. Maksimchuk, Michael W. ENGLE, Bobbi J. Young, Jim Conallen, Kellia Houston, 3rd edition, 2013, PEARSON
2. "The Unified Modeling Language User Guide", Grady Booch, James Rumbaugh, Ivar Jacobson, 12th Impression, 2012, PEARSON.

Reference Books:

1. “Object-oriented analysis and design using UML”, Mahesh P. Matha, PHI
2. “Head first object-oriented analysis and design”, Brett D. McLaughlin, Gary Pollice, Dave West, O‟Reilly
3. “Object-oriented analysis and design with the Unified process”, John W. Satzinger, Robert B. Jackson, Stephen D. Burd, Cengage Learning
4. “The Unified modeling language Reference manual”, James Rumbaugh, Ivar Jacobson, Grady Booch, Addison-Wesley

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – II Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

DATA MINING

Course Objective

- Understand data mining principles and techniques: Introduce DM as a cutting edge business intelligence method and acquaint the students with the DM techniques for building competitive advantage through proactive analysis, predictive modeling, and identifying new trends and behaviors.
- Building basic terminology.
- Learn how to gather and analyze large sets of data to gain useful business understanding.
- Learn how to produce a quantitative analysis report/memo with the necessary information to make decisions.
- Describing and demonstrating basic data mining algorithms, methods, and tools
- Identifying business applications. Other applications of data mining
- Develop and apply critical thinking, problem-solving, and decision-making skills.

Course Outcomes

- Apply preprocessing statistical methods for any given raw data.
- Select and apply proper Data mining algorithms to build analytical applications.
- Develop practical work of Data Mining techniques and design hypothesis based on the analysis to conceptualize a Data Mining Solution to practical problem.

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, 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

Basic Concepts, Decision Trees, and Model Evaluation: Preliminaries, General Approach to Solving a Classification Problem, Decision Tree Induction, Model Over fitting, Evaluating the Performance of a Classifier, Methods for Comparing Classifiers.

UNIT III

Mining Frequent Patterns, Associations and Correlations: Basic Concepts, The Apriori algorithm for finding frequent item sets using candidate generation, Generating association rules from frequent item sets, Mining frequent item sets without candidate generation, Mining various kinds of Association Rules, Correlation Analysis

UNIT IV

Classification and Prediction: Description and comparison of classification and prediction, preparing data for Classification and Prediction

Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by Back propagation Prediction, linear and non-linear regression, evaluating accuracy of a Classifier or a Predictor

UNIT V

Cluster Analysis: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, k-means and k-mediods methods, CLARANS, Agglomerative and divisive hierarchical clustering, chameleon dynamic modeling, clustering based on density distribution function, wavelet transformation based clustering, conceptual Clustering, Constraint-Based Cluster Analysis, Outlier Analysis.

TEXT BOOKS:

1. Data Mining – Concepts and Techniques - Jiawei Han , Micheline Kamber, and Jian Pei, Morgan Kaufmann Publishers, 3rdEdition, ELSEVIER.

REFERENCE BOOKS:

1. Data Warehousing in the Real World – Sam Aanhory & Dennis Murray Pearson Edn Asia.
2. Insight into Data Mining, K.P.Soman ,S.Diwakar, V.Ajay,PHI,2008.
3. Data Warehousing Fundamentals – Paulraj Ponnaiah Wiley student Edition
4. The Data Warehouse Life cycle Tool kit – Ralph Kimball Wiley student edition
5. Building the Data Warehouse By William H Inmon, John Wiley & Sons Inc, 2005.
6. Data Mining Introductory and advanced topics –Margaret H Dunham, Pearson education
7. Data Mining Techniques – Arun K Pujari,2nd edition, Universities Press.
8. Data Mining, V. Pudi and P. RadhaKrishna, Oxford University Press.
9. Data Mining: Methods and Techniques, A.B.MShawkat Ali and S.A. Wasimi,Cengage Learning.
10. Data Warehouse 2.0,The Architecture for the next generation of Data Warehousing, W.H.Inmon, D.Strauss, G.Neushloss, Elsevier, Distributed by SPD.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III - II Sem.
(C.S.E)

L	T	C
3	1	3

Internet Technologies

Course Objective:

- Learn to build and access databases using java.
- Learn to communicate over a network using java.
- Learn to design server side programs and access them from client side.

Learning Outcome:

Upon completion of this course, students will receive:

- **Familiarity with WWW technical concepts:** IP addressing, routing, client-server interaction, and basic HTTP server functionality.
- **Exposure to basic web programming:** including Html programming (manual and tool assisted), JavaScript programming of reactive web pages elements.
- **Exposure to** database programming using java
- The necessary skills to write server side programs
- A solid foundation for further exploration of more advanced web programming technologies.

UNIT I

Fundamentals: Introduction to the web, Web servers and clients, Resources, URL and its anatomy, message format, persistent and non persistent connections, Web caching, proxy, java and the net, java network classes and interfaces, looking up internet address, client/server programs, socket programming, e-mail client, POP3 programs, remote method invocation, example
Selectors

UNIT II

HTML: HTML and its flavors, HTML basics, Elements, Attributes and tags, Basic tags, Advanced Tags, Frames, Images, Meta tag, Planning of webpage, Model and structure for a website, designing web pages, Multimedia content.
Cascading Style Sheets: Advantages, Adding CSS, Browser, compatibility, CSS and Page layout, Selectors

UNIT III

Java Script: Introduction, Variables, Literals, Operators, Control structure, Conditional statements, Arrays, Functions, Objects, Predefined objects, Object hierarchy, Accessing objects, Events, Event handlers, Multiple windows and Frames, Form object and Element, Advanced JavaScript and HTML, Data entry and Validation, Tables and Forms, DHTML with JavaScript

UNIT IV

Server side programming: Internet programming paradigm, Server-side programming, Languages for CGI, Applications, Server environment, Environment variables, CGI building blocks, CGI scripting using C, Shell script, Writing CGI program, CGI security, Alternatives and Enhancement to CGI, Server-side Java, Advantages over applets, Servlet alternatives, Servlet strengths, Servlet Architecture, Servlet Life cycle, Generic and HTTP Servlet, First servlet, passing parameters to servlets, retrieving parameters, Server-side include, cookies, filters, Problems with servlet, Security issues, JSP and HTTP, JSP Engines, How JSP works, JSP and Servlet, Anatomy of a JSP Page, JSP syntax, JSP components.

UNIT V

Sever side programming continued: Beans, Session tracking, Users passing control and data between pages, Sharing session and Application data, Database connectivity, JDBC drivers, Basic steps, Loading

a driver, Making a connection, Execute and SQL statement, SQL statements, Retrieving the result, Getting database information, Scrollable and updatable result set, Result set metadata, Introduction to JavaBeans, Bean builder, Advantages of Java Beans, BDK introspection, Properties, Bean Info interface, Persistence, Customizer, JavaBeans API, EJB, Introduction to Struts Framework.

Text Books:

1. Web Technologies: HTML, JavaScript, PHP, Java, JSP, XML, And AJAX, Black Book, KOGENT LEARNING SOLUTIONS INC.
2. Web Technologies, Uttam K. Roy, 1st edition 7th impression, 2012, Oxford Higher Education

Reference Books:

1. Java How to program, Paul deitel, Harvey deital, PHI
   Introduction to Java Programming, Y.Daniel Liang, 6th Edition, Pearson Education,
2. 2007
3. The J2EE Tutorial, Stephanie Bodoff et al, 2nd Edition, Pearson Education, 2004.
4. Web Technologies, Roy, Oxford University Press
5. Web Technologies, Srinivasan, Pearson Education, 2012
6. Java EE 5 for Beginners, Ivan Bayross, Sharanam Shah, Cynthia Bayrossand Vaishali Shai, SPD.
   Programming the Worldwide Web, Robert W.Sebesta, 7th edition, 2009, Pearson Education

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – II Sem. (C.S.E)	L	T	C
	3	1	3

Software Testing

Course Objective:

- Fundamentals for various testing methodologies.
- Describe the principles and procedures for designing test cases.
- Provide supports to debugging methods.
- Acts as the reference for software testing techniques and strategies.

Learning Outcome:

- Understand the basic testing procedures.
- Able to support in generating test cases and test suites.
- Able to test the applications manually by applying different testing methods and automation tools.
- Apply tools to resolve the problems in Real time environment.

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.

UNIT III

Domain Testing: Domains and Paths, Nice & Ugly Domains, Domain testing, Domains and Interfaces Testing, Domain and Interface Testing, Domains and Testability.

Paths, Path products and Regular expressions: Path Products & Path Expression, Reduction Procedure, Applications, Regular Expressions & Flow Anomaly Detection.

UNIT IV

Logic Based Testing: Overview, Decision Tables, Path Expressions, KV Charts, Specifications.

State, State Graphs and Transition Testing: State Graphs, Good & Bad State Graphs, State Testing, Testability Tips.

UNIT V:

Software Testing Tools: Introduction to Testing, Automated Testing, Concepts of Test Automation, Introduction to list of tools like Win runner, Load Runner, Jmeter, About Win Runner ,Using Win runner, Mapping the GUI, Recording Test, Working with Test, Enhancing Test, Checkpoints, Test Script Language, Putting it all together, Running and Debugging Tests, Analyzing Results, Batch Tests, Rapid Test Script Wizard.

Text Books :

1. Software testing techniques – Boris Beizer, Dreamtech, second edition.
2. Software Testing- Yogesh Singh, Camebridge

Reference Books :

1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing, 3rd edition, P.C. Jorgensen, Aurbach Publications (Dist.by SPD).
3. Software Testing, N.Chauhan, Oxford University Press.
4. Introduction to Software Testing, P.Ammann & J.Offutt, Cambridge Univ.Press.
5. Effective methods of Software Testing, Perry, John Wiley, 2nd Edition, 1999.
6. Software Testing Concepts and Tools, P.Nageswara Rao, dreamtech Press
7. Win Runner in simple steps by Hakeem Shittu,2007 Genixpress.
8. Foundations of Software Testing, D.Graham & Others, Cengage Learning.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – II Sem. (C.S.E)	L	T	C
	3	1	3

Data Analytics - I

Objectives:

- To introduce the terminology, technology and its applications
- To introduce the concept of Analytics for Business
- To introduce the tools, technologies & programming languages which is used in day to day analytics cycle

Unit I

Introduction to Analytics and R programming (NOS 2101)

Introduction to R, RStudio (GUI): R Windows Environment, introduction to various data types, Numeric, Character, date, data frame, array, matrix etc., Reading Datasets, Working with different file types .txt,.csv etc. Outliers, Combining Datasets, R Functions and loops.

Summary Statistics - Summarizing data with R, Probability, Expected, Random, Bivariate Random variables, Probability distribution. Central Limit Theorem etc.

Unit II

SQL using R & Correlation and Regression Analysis (NOS 2101)

Introduction to NoSQL, Connecting R to NoSQL databases. Excel and R integration with R connector.

Regression Analysis, Assumptions of OLS Regression, Regression Modelling. Correlation, ANOVA, Forecasting, Heteroscedasticity, Autocorrelation, Introduction to Multiple Regression etc.

Unit III

Understand the Verticals - Engineering, Financial and others (NOS 2101)

Understanding systems viz. Engineering Design, Manufacturing, Smart Utilities, Production lines, Automotive, Technology etc.

Understanding Business problems related to various businesses

Unit IV

Manage your work to meet requirements (NOS 9001)

Understanding Learning objectives, Introduction to work & meeting requirements, Time Management, Work management & prioritization, Quality & Standards Adherence,

Unit V

Work effectively with Colleagues (NOS 9002)

Introduction to work effectively, Team Work, Professionalism, Effective Communication skills, etc.

NOS * National Occupational Standards

Text Books:

1. **Student's Handbook for Associate Analytics.**
2. Introduction to Scientific Programming and Simulation Using R, Owen Jones, Robert Maillardet and Andrew Robinson, Second Edition, CRC Press, 2014
3. A First Course in Statistical Programming with R, Braun W. J., Murdoch D. J.. — Cambridge University Press, 2007
4. Data Manipulation with R, Jaynal Abedin and Kishor Kumar Das, Second Edition, Packt publishing, BIRMINGHAM – MUMBAI.
5. Beginning R The Statistical Programming language- Mark Gardener, John Wiley & Sons, Inc, 2012

Reference Books:

6. Introduction to Probability and Statistics Using R, ISBN: 978-0-557-24979-4, is a textbook written for an undergraduate course in probability and statistics.
7. An Introduction to R, by Venables and Smith and the R Development Core Team. This may be downloaded for free from the R Project website (http://www.r-project.org/, see Manuals). There are plenty of other free references available from the R Project website.
8. Time Series Analysis and Mining with R**,** Yanchang Zhao
9. Graphics for Statistics and Data Analysis with R – Kevin J. Keen, CRC Press, 2010
10. Data Analysis and Graphics Using R, Third Edition, John Maindonald, W. John Braun, Cambridge University Press, 2010
11. Exploratory Data Analysis with R – Roger D. Peng, Leanpub publications, 2015
12. Introduction to Probability and Statistics Using R, G. jay Kerns, First Edition, 2011
13. The Art of Data Science- A Guide for anyone Who Works with Data – Roger D. Peng and Elizabeth Matsui, Leanpub Publications, 2014
14. Montgomery, Douglas C., and George C. Runger, Applied statistics and probability for engineers. John Wiley & Sons, 2010.The Basic Concepts of Time Series Analysis. http://anson.ucdavis.edu/~azari/sta137/AuNotes.pdf

2013-2014

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – II Sem. (C.S.E)	L	T	C
	2	0	0

ADVANCED ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

1. Introduction:

In the past engineering education has focused only on imparting "hard" or technical skills. With the entry of multinational companies in India there is a revolutionary change in the employment opportunities and recruitment process as well. Globalization demands universities to produce engineers who are equipped with effective interpersonal skills to meet global demands.

In this scenario the **Advanced English Language Communication skills lab** introduced at the 3rd B. Tech. level plays a key role to learn the foreign language in a happy atmosphere and in a successful way. Breaking through the traditional method of teaching, this course motivates student's learning attitude by providing an interactive learning environment.

This course is developed on the methodology of LSRW skills along with soft skills. This course focuses on the practical aspects of listening, speaking, reading and writing that enable the students to expose to various activities like group discussions, Oral Presentations, Mock interview sessions etc., Personality development, etiquettes and to provide corporate knowledge to help the students in facing interviews in a formal organizational set up.

2. Objectives:

This lab focuses on using computer-aided multimedia instruction for language development to meet the following targets:

- To expose the students to a variety of self instructional, learner-friendly modes of language learning.
- To enable the students to learn better pronunciation and accent through listening and reading exercises.
- To train students to use language appropriately for interviews, group discussion and public speaking.

- To initiate them to greater use of the computer in resume preparation, format-making etc.

- To help the students to cultivate the habit of reading passages from the computer monitor, thus providing them with the required facility to face computer based competitive exams such as GRE, TOFEL, and GMAT etc.

- To enable the students to acquire good communication skills as well as soft skills to meet global demands.

3 Syllabus:

The following course content is prescribed for the Advanced Communication Skills Lab:

Unit I:

Reading &Listening Comprehension: Skimming –scanning- Extensive and Intensive reading. Reading for making inferences. Active VS passive listening. Listening and Note taking, - Listening for making inferences.

. Unit II:

Writing Skills: Formal and informal writing- Resume Writing-E-Correspondence.

. **Unit III:**

Technical Presentations (Oral) : Planning-Preparation-Presentation . Art of Persuasion- Audience analysis- Handling questions. .

Unit IV:

Interview Skills: Types of Interviews - pre-interview planning- answering strategies. Analysis of One to one –interviews – group interviews - Mock interviews.

Unit V:

Soft Skills: Inter Personal Skills- Goal setting – Etiquettes and good manners – Team Working – Work Ethics--Time management – Problem Solving. **.**

Minimum Requirements

The English Language Lab shall have two parts:

The Computer Aided Language Lab for 60 students with 60 systems, one master console, LAN facility and English language software for self-study by learners.

The Communication Skills Lab with movable chairs and audio-visual aids with a PA System, a TV, a digital stereo-audio and video system, a Camcorder, etc

System Requirement (Hardware Component):

Computer network with LAN with a minimum of 60 multimedia systems with the following specifications:

P-IV Processor

Speed-2.8 GHZ

RAM_512 MB minimum

Hard Disk-80 GB

Headphones

Prescribed Software:

9. K-Van Advanced Communication Skills

10. Walden Infotech Advanced Communication Skills.

Books Suggested for English Language Lab Library (to be located within the lab in addition to the CDs of the text book which are loaded on the systems):

1. **Technical Writing and Professional Communication, Huckin and Olsen** Tata Mc Graw-Hil 2009.

2. **Technical Communication** by Meenakshi Raman & Sangeeta Sharma, Oxford University Press 2009.

3. **Cambridge English for Job-Hunting** by Colm Downes, Cambridge University Press, 2008

4. **Resume's and Interviews** by M.Ashraf Rizvi, Tata Mc Graw-Hill, 2008

5.. **English Language Communication : A Reader cum Lab Manual** Dr A Ramakrishna Rao, Dr G Natanam & Prof SA Sankaranarayanan, Anuradha Publications, Chennai 2008.

6. **Managing Soft Skills** by K R Lakshminarayan and T.Muruguvel, Sci-Tech Publications, 2010

7. **The ACE of Soft Skills** by Gopal Ramesh and Mahadevan Ramesh, Pearson Education, 2010

8. **Soft Skills** by Dr. K. Alex, S.Chand

9. **Study Skills for Professional Students in Higher Education** by Dr. M. Adithan, S.Chand.

10. **Personality Development and Soft Skills by Barun** K. Mitra, Oxford Higher Education.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – II Sem. (C.S.E)	T	P	C
	0	3	2

Object oriented Analysis and Design Using UML

and Software Testing Lab

Course Objective

- Practice the notation for representing various UML diagrams
- Analyze and design the problem by representing using UML diagrams
- Become familiar with all phases of OOAD

Course Outcomes

- Find solutions to the problems using object oriented approach
- Represent using UML notation and interact with the customer to refine the UML diagrams

Part A: UML Programs

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.

Problems that may be considered are

1. College information system
2. Hostel management
3. ATM system

Part B : Software Testing Lab

1 Write programs in 'C' Language to demonstrate the working of the following constructs:

i) do...while
ii) while….do
iii) if…else
iv) switch
v) for

2 "A program written in 'C' language for Matrix Multiplication fails" Introspect the causes for its failure and write down the possible reasons for its failure.

3 Take any system (e.g. ATM system) and study its system specifications and report the various bugs.

4 Write the test cases for any known application (e.g. Banking application)

5 Create a test plan document for any application (e.g. Library Management System)

6 Study of Win Runner Testing Tool and its implementation

a) Win runner Testing Process and Win runner User Interface.
b) How Win Runner identifies GUI (Graphical User Interface) objects in an application and describes the two modes for organizing GUI map files.
c) How to record a test script and explains the basics of Test Script Language (TSL).
d) How to synchronize a test when the application responds slowly.
e) How to create a test that checks GUI objects and compare the behaviour of GUI objects in different versions of the sample application.
f) How to create and run a test that checks bitmaps in your application and run the test on different versions of the sample application and examine any differences, pixel by pixel.
g) How to Create Data-Driven Tests which supports to run a single test on several sets of data from a data table.
h) How to read and check text found in GUI objects and bitmaps.
i) How to create a batch test that automatically runs the tests.
j) How to update the GUI object descriptions which in turn supports test scripts as the application changes.

Apply Win Runner testing tool implementation in any real time applications.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. III – II Sem. (C.S.E)	T	P	C
	0	3	2

Internet Technologies and Data Mining Lab

Part A: Internet Technologies Lab

Course Outcomes:

- To create a fully functional website with MVC architecture. To develop an online Book store using we can sell books (Ex: amazon .com).
- To obtain practical experience using data mining techniques on real world data sets.
- Emphasize hands-on experience working with all real data sets.

Course Outcomes:

- Ability to apply object oriented concepts for programming and its use.
- Practical WEB Development using java by using JDBC and ODBC connectivity.
- Implementation of servlets and PHP connectivity by using MYSQL applications.
- Learning how to use PHP in different operating systems with different editors like eclipse and net beans.
- Acquire skills to develop final project by acquired knowledge during curriculum.
- Design data mining algorithms.

Hardware and Software required:

1. A working computer system with either Windows or Linux
2. A web browser either IE or Firefox
3. Apache web server or IIS Webserver
4. XML editor like Altova Xml-spy [www.Altova.com/**XML**Spy – free], Stylus studio, etc.,
5. A database either MySQL or Oracle
6. JVM (Java virtual machine) must be installed on your system
7. BDK (Bean development kit) must be also be installed

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 ofthe Web Site			

Fig 1.1

2) LOGIN PAGE:

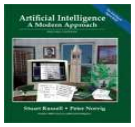
This page looks like below:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Login : Passwor Submit Reset			

3) CATOLOGUE PAGE:

The catalogue page should contain the details ofall the books available in the web site in a table. The details should contain the following:

2013-2014
Snap shot ofCover Page.
Author Name.
Publisher.
Price.
Add to cart button.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	   	Book : XML Bible Author : Winston Publication : Wiely Book : AI Author : S.Russel Publication : Princeton hall Book : Java 2 Author : Watson Publication : BPB publications Book : HTML in 24 hours Author : Sam Peter Publication : Sam publication	$ 40.5 $ 63 $ 35.5 $ 50	Add to cart Add to cart Add to cart Add to cart

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.

The cart page should look like this:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart

ECE EEE CIVIL	Java 2 XML bible	$35.5 $40.5	2 1	$70 $40.5
		Total amount -		$130.5

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 ofbirth (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 ofthe above registration page.

Name (Name should contains alphabets and the length should not be less than 6 characters).
Password (Password should not be less than 6 characters length).
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 ofyour pages, you refer to these selectors to activate the styles.
For example:

```
<HTML>
<HEAD>
<style type="text/css">
B.headline {color:red, font-size:22px, font-family:arial, text-
decoration:underline}
</style>

</HEAD>

<BODY>
<b>This is normal bold</b><br>
Selector {cursor:value}

For example:

<html>
<head>
<style type="text/css">
```

```
.xlink {cursor:crosshair}
.hlink{cursor:help}
</style>
</head>

<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>

<b class="headline">This is headline style bold</b>
</BODY>

</HTML>
```

2) Set a background image for both the page and single elements on the page. You can define the background image for the page like this:

```
BODY {background-image:url(myimage.gif),}
```

3) Control the repetition ofthe 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:
LAYER 1 LAYER 2

LAYER 2 ON TOP:
LAYER 1 LAYER 2

6) Add a customized cursor:

Selector {cursor:value}

For example:

```
<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
.hlink{cursor:help}
</style>
</head>

<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>
```

Week-5:

Write an XML file which will display the Book information which includes the following:

1) Title ofthe 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 ofthe 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:

VISUAL BEANS:

Create a simple visual bean with a area filled with a color.
The shape ofthe area depends on the property shape. If it is set to true then the shape ofthe area is Square and it is Circle, if it is false.
The color ofthe area should be changed dynamically for every mouse click. The color should also be changed if we change the color in the "property window ".

Week-7:

1) Install IIS web server and APACHE.

While installation assign port number 4040 to IIS and 8080 to APACHE. Make sure that these ports are available i.e., no other process is using this port.

2) Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root.

Access the pages by using the urls : http://localhost:4040/rama/books.html (for tomcat)
http://localhost:8080/books.html (for Apache)

Week-8:

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-9:

Install a database(Mysql or Oracle).

Create a table which should contain at least the following fields: name, password, email-id, phone number(these should hold the data from the registration form).

Write a PHP program to connect to that database and extract data from the tables and display them. Experiment with various SQL queries.

Insert the details ofthe users who register with the web site, whenever a new user clicks the submit button in the registration page (week2).

Week-10:

Write a PHP which does the following job:

Insert the details ofthe 3 or 4 users who register with the web site (week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database (similar to week8 instead of cookies).

Week-11:

Create tables in the database which contain the details of items (books in our case like Book name , Price, Quantity, Amount) ofeach category. Modify your catalogue page (week 2)in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using PHP

Week-12:

HTTP is a stateless protocol. Session is required to maintain the state.

The user may add some items to cart from the catalog page. He can check the cart page for the selected items. He may visit the catalogue again and select some more items. Here our interest is the selected items should be added to the old cart rather than a new cart. Multiple users can do the same thing at a time(i.e., from different systems in the LAN using the ip-address instead oflocalhost). This can be achieved through the use ofsessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated (by using the method session.invalidate()). Modify your catalogue and cart PHP pages to achieve the above mentioned functionality using sessions.

Part B: Data Mining Lab

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 assessment ? Come up with some simple rules in plain English using your selected attributes. (5 marks)

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. (10 marks)

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? (10 marks)

5. Is testing on the training set as you did above a good idea? Why or Why not ? (10 marks)

6. One approach for solving the problem encountered in the previous question is using cross-validation? Describe what is cross-validation briefly. Train a Decision Tree again using cross-validation and report your results. Does your accuracy increase/decrease? Why? (10 marks)

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? Discuss. (10 marks)

8. 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 7. Remember to reload the arff data file to get all the attributes initially before you start selecting the ones you want.) (10 marks)

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 marks)

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? (10 marks)

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? (10 marks)

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. (10 marks)

Task Resources:

- Andrew Moore's Data Mining Tutorials (See tutorials on Decision Trees and Cross Validation)
- Decision Trees (Source: Tan, MSU)
- Tom Mitchell's book slides (See slides on Concept Learning and Decision Trees)
- Weka resources:
    - Introduction to Weka (html version) (download ppt version)
    - Download Weka
    - Weka Tutorial

- ARFF format
- 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.,)

2013-2014

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.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	L	T	C
	3	1	3

Software Architecture

COURSE OBJECTIVES:

- Introduction to the fundamentals of software architecture.
- Software architecture and quality requirements of a software system
- Fundamental principles and guidelines for software architecture design, architectural styles, patterns, and frameworks.
- Methods, techniques, and tools for describing software architecture and documenting design rationale.
- Software architecture design and evaluation processes.

COURSE OUTCOMES:

The student will be able to:

- Design and motivate software architecture for large scale software systems
- Recognize major software architectural styles, design patterns, and frameworks
- Describe a software architecture using various documentation approaches and architectural description languages
- Generate architectural alternatives for a problem and select among them
- Use well-understood paradigms for designing new systems

UNIT I: ENVISIONING ARCHITECTURE

What is software Architecture-What is Software Architecture, Other Points of View, Architectural Patterns, Reference Models, and Reference Architectures, Importance of Software Architecture, Architectural Structures and views.

ENVISIONING ARCHITECTURE:

Architecture Business Cycle- Architectures influences, Software Processes and the Architecture Business Cycle, Making of "Good" Architecture.

UNIT II: DESIGNING THE ARCHITECTURE WITH STYLES

Designing the Architecture: Architecture in the Life Cycle, Designing the Architecture, Formatting the Team Structure, Creating a Skeletal System.

Architecture Styles: Architectural Styles, Pipes and Filters, Data Abstraction and Object-Oriented Organization, Event-Based, Implicit Invocation, Layered Systems, Repositories, Interpreters.

UNIT III: CREATING AN ARCHITECTURE-I

Creating an Architecture: Understanding Quality Attributes – Functionality and Architecture, Architecture and Quality Attributes, System Quality Attributes, Quality Attribute. Scenarios in Practice, Other System Quality Attributes, Business Qualities, Architecture Qualities.

Achieving Qualities: Introducing Tactics, Availability Tactics, Modifiability Tactics, Performance Tactics, Security Tactics, Testability Tactics, Usability Tactics.

UNIT IV: CREATING AN ARCHITECTURE-II

Documenting Software Architectures: Use of Architectural Documentation, Views, Choosing the Relevant Views, Documenting a view, Documentation across Views. Reconstructing Software Architecture: Introduction, Information Extraction, Database Construction, View Fusion, and Reconstruction.

UNIT V: ANALYZING ARCHITECTURES

The ATAM: Participants in the ATAM, Outputs of The ATAM, Phases Of the ATAM. The CBAM: Decision-Making Context, The Basis for the CBAM, Implementing the CBAM. The World Wide Web:A Case study in Interoperability- Relationship to the Architecture Business Cycle, Requirements and Qualities, Architecture Solution, Achieving Quality Goals.

TEXT BOOKS:

1. Software Architectures in Practice , Len Bass, Paul Clements, Rick Kazman, 2nd Edition, Pearson Publication.

2. Software Architecture , Mary Shaw and David Garlan, First Edition, PHI Publication, 1996.\

REFERENCES BOOKS:

1. **Software Design: From Programming to Architecture**, Eric Braude**,** Wiley, 2004.

2. N. Domains of Concern in Software Architectures and Architecture Description Languages. Medvidovic and D. S. Rosenblum. USENIX.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	L	T	C
	3	1	3

CRYPTOGRAPHY & NETWORK SECURITY

Course Objective:

1) To provide students with a theoretical base in networks security issues.
2) Students will be able purse their study in advanced networking courses.
3) Students will able to Design, Implement, and Analyze simple Network Security Concepts.
4) Students will able to identify, formulate, and solve network engineering issues.
5) Understanding the various cryptographic algorithms and implementation of the same.
6) Understanding the various attacks, security mechanisms and services

Course Outcome:

1) Protect the network from both internal and external attacks (PO 8)
2) Understand and implement various public and private key cryptographic algorithms (PO 2)
3) Design of new security approaches (PO 3)

UNIT I

Computer Security Concepts, The OSI Security Architecture, Security Attacks, Security Services And Security Mechanisms, Classical Encryption Techniques- Symmetric Cipher Model, Substitution Ciphers, Transposition Ciphers, Steganography, Modern Block Ciphers, Modern Stream Ciphers.

Modern Block Ciphers: Block Ciphers Principles, Data Encryption Standard (DES), Linear And Differential Cryptanalysis, Block Cipher Modes Of Operations, AES.

UNIT II

Public-Key Cryptography : Principles Of Public-Key Cryptography, RSA Algorithm, Diffie-Hellman Key Exchange, Elgamal Cryptographic System, Elliptic Curve Arithmetic, Elliptic Curve Cryptography

Cryptographic Hash Functions: Applications Of Cryptographic Hash Functions, Requirements And Security, Hash Functions Based On Cipher Block Chaining, Secure Hash Algorithm (SHA).

UNIT III

Message Authentication Codes: Message Authentication Requirements, Message Authentication Functions, Requirements For Message Authentication Codes, Security Of Macs, HMAC, Macs Based On Block Ciphers, Authenticated Encryption.

Digital Signatures and Authentication Protocols: Digital Signatures, Authentication Protocols.

UNIT IV

Key Management And Distribution: Symmetric Key Distribution Using Symmetric Encryption, Symmetric Key Distribution Using Asymmetric, Distribution Of Public Keys, X.509 Certificates, Public Key Infrastructure.

Electronic Mail Security: Pretty Good Privacy (PGP), S/MIME

UNIT V

Security At The Transport Layer(SSL And TLS) : SSL Architecture, Four Protocols, SSL Message Formats, Transport Layer Security, HTTPS, SSH

Security At The Network Layer (Ipsec): Two Modes, Two Security Protocols, Security Association, Security Policy, Internet Key Exchange.

Intruders: Intruders, Intrusion Detection, Password Management, Firewalls, Viruses and Worms.

Text Books :

1. Cryptography and Network Security: Principals and Practice, William Stallings, Fifth Edition, Pearson Education.
2. Cryptography and Network Security, Behrouz A. Frouzan and Debdeep Mukhopadhyay, 2nd edition, Mc Graw Hill Education

Reference Books :

1. Network Security and Cryptography, Bernard Menezes , Cengage Learning.
2. Cryptography and Security, C.K. Shymala, N. Harini and Dr. T.R. Padmanabhan, Wiley-India.
3. Applied Cryptography, Bruce Schiener, 2nd edition, John Wiley & Sons.
4. Cryptography and Network Security, Atul Kahate, TMH.
5. Introduction to Cryptography, Buchmann, Springer.
6. Number Theory in the Spirit of Ramanujan, Bruce C.Berndt, University Press
7. Introduction to Analytic Number Theory, Tom M.Apostol, University Press

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	L	T	C
	3	1	3

MOBILE APPLICATION DEVELOPMENT

Course Objective:

- *Introducing the J2ME and how to write the code for small computing device.*
- *Design & program real working education based mobile application projects.*
- *To introduce the Android technology and its application.*
- *Become familiar with common mobile application technologies and platforms.*

Learning Outcome:

At the end of the course students will be assessed to determine whether they are able to

- *Design, implement and evaluate a User Interface for a mobile application using J2ME.*
- *Be exposed to technology and business trends impacting mobile applications.*
- *Create a small but realistic working mobile application for small computing devices.*
- *Categorize the challenges posed by developing mobile applications and be able to propose and evaluate and select appropriate solutions*
- *Describe and work within the capabilities and limitations of a range of mobile computing devices.*
- *Be competent with designing and developing mobile applications using one application development framework.*

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, Messaging, Personal Digital Assistants.

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.

UNIT II

J2ME Best Practices and Patterns: The Reality of Working in a J2ME World, Best Practices. **Commands, Items, and 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.

UNIT III

Low Level Display: The Canvas, User Interactions, Graphics, Clipping Regions, Animation.
Record Management System: Record Storage, Writing and Reading Records, Record Enumeration, Sorting Records, Searching Records, Record Listener.

UNIT IV

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, Updating Tables, Deleting Data from a table. Joining Tables, Calculating Data, Grouping and Ordering Data

UNIT V

Getting started with Android Programming: What is Android, Obtaining the required tools, Creating your First Android Application. Anatomy of an Android Application.
Activities, Fragments and Intents: Understanding Activities, Linking Activities Using Intents, Fragments, Calling Built – in Applications using Intents, Displaying Notifications
Android User Interface: Understanding the Components of a Screen, Adapting to Display Orientation, Managing Changes to Screen Orientation, Utilizing the Action Bar, Listening for UI Notifications.

Text Books :

1. J2ME: The Complete Reference, James Keogh, TMH.
2. Beginning Android 4 Application Development, Wei-Meng Lee, Wiley India

Reference Books :

1. Enterprise J2ME: Developing Mobile Java Applications, Michael Juntao Yuan, Pearson Education, 2004.
2. Android Application Development for Java programming by James C. Sheusi, Cengage.
3. Learning Android A Programmers Guide by Jerome DiMargio, TMH.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Cloud Computing

Course Objective

- To introduce the various levels of services that can be achieved by cloud computing.
- To describe the security aspects in cloud computing.
- Provide an idea on the underlying infrastructure and architecture of clouds, techniques for enabling services and the quality of such services, as well as issues in designing clouds.
- Address the research issues in performance, security, and management.

Course Outcomes

- Students can able to program enterprise clouds and to analyze data on clouds using Aneka.
- Students learn and understand tools and techniques for using, designing, and implementing clouds as well as services.
- Ability to design applications for cloud environment.
- Ability to create cloud computing environments.

UnitI: Systems Modeling, Clustering and Virtualization
Distributed System Models and Enabling Technologies,Computer Clusters for Scalable Parallel Computing, Virtual Machines, and Virtualization of Clusters and Data centers.

Unit - II
Introduction to Cloud Computing
Roots of Cloud Computing, Layers and Types of Clouds, Features of a Cloud, Cloud Infrastructure Management, Software as a service providers, Infrastructure as a Service Providers, Platform as a Service Providers, Challenges and Opportunities.

Unit - III
Programming Enterprise Clouds using Aneka
Introduction, Aneka Architecture, Thread Programming using Aneka, Task Programming: using Aneka, Map Reduce Programming using Aneka.

Unit IV: Monitoring, Management and Applications
An Architecture for Federated Cloud Computing, SLA Management in Cloud Computing, Performance Prediction for HPC on Clouds, Best Practices in Architecting Cloud Applications in the AWS cloud, Building

Content Delivery networks using Clouds, Resource Cloud Mashups.

Unit V: Governance and Case Studies
Organizational Readiness and Change management in the Cloud age, Data Security in the Cloud, Legal Issues in Cloud computing, Achieving Production Readiness for Cloud Services.

TEXT BOOKS:
1. Cloud Computing: Principles and Paradigms by RajkumarBuyya, James Broberg and Andrzej M. Goscinski, Wiley, 2011.
2. Distributed and Cloud Computing , Kai Hwang, GeofferyC.Fox, Jack J.Dongarra, Elsevier, 2012.

REFERENCE BOOKS:
1. Cloud Computing : A Practical Approach, Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, Tata McGraw Hill, rp2011.
2. Enterprise Cloud Computing, GautamShroff, Cambridge University Press, 2010.
3. Cloud Computing: Implementation, Management and Security, John W. Rittinghouse, James F.Ransome, CRC Press, rp2012.
4. Cloud Application Architectures: Building Applications and Infrastructure in the Cloud, George Reese, O'Reilly, SPD, rp2011.
5. Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance, Tim Mather, SubraKumaraswamy, ShahedLatif, O'Reilly, SPD, rp2011.
6. cloud computing - principles,systems and applications by Springer publications.

JNTUA College Of Engineering (Autonomous):: Anantapuramu
Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	L	T	C
	3	1	3

Data Analytics – II

(Open Elective/CBCS)

Unit I

Data Management & Introduction to Big Data Tools (NOS 2101)

Design Data Architecture and manage the data for analysis, understand various sources of Data like Sensors/signal/GPS etc.

Export all the data onto Cloud ex. AWS/Rackspace etc.

Introduction to Big Data tools like Hadoop, Spark, Impala etc., Data ETL process, Identify gaps in the data and follow-up for decision making.

Unit II

Big Data Analytics & Machine Learning Algorithms (NOS 2101)

Run descriptives to understand the nature of the available data, collate all the data sources to suffice business requirement, Run descriptive statistics for all the variables and observer the data ranges, Outlier detection and elimination.

Hypothesis testing and determining the multiple analytical methodologies, Train Model on 2/3 sample data using various Statistical/Machine learning algorithms, Test model on 1/3 sample for prediction etc.

Unit III

Data Visualization (NOS 2101)

Prepare the data for Visualization, Use tools like Tableau, QlickView and D3, Draw insights out of Visualization tool.

Unit IV

Maintain Healthy, Safe & Secure Working Environment (NOS 9003)

Introduction, workplace safety, Report Accidents & Emergencies, Protect health & safety as your work**,** course conclusion, assessment

Unit V

Provide Data/Information in Standard Formats (NOS 9004)

Introduction, Knowledge Management, Standardized reporting & compliances, Decision Models, course conclusion. Assessment

Text Books:

1. **Student's Handbook for Associate Analytics.**

Reference Books:

1. Introduction to Data Mining, Tan, Steinbach and Kumar, Addison Wesley, 2006
2. Data Mining Analysis and Concepts, M. Zaki and W. Meira (the authors have kindly made an online version available): http://www.dataminingbook.info/uploads/book.pdf
3. Mining of Massive Datasets Jure Leskovec Stanford Univ. Anand Rajaraman Milliway Labs Jeffrey D. Ullman Stanford Univ.
   (http://www.vistrails.org/index.php/Course:_Big_Data_Analysis)

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu
Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

ARTIFICIAL INTELLIGENCE
(Open Elective/CBCS)

Objectives:
To learn the basics of designing intelligent agents that can solve general purpose problems, represent and process knowledge, plan and act, reason under uncertainty and can learn from experiences.

UNIT I

PROBLEM SOLVING
Introduction – Agents – Problem formulation – uninformed search strategies – heuristics – informed search strategies – constraint satisfaction

UNIT II

LOGICAL REASONING
Logical agents – propositional logic – inferences – first-order logic – inferences in firstorder logic – forward chaining – backward chaining – unification – resolution

UNIT III

PLANNING
Planning with state-space search – partial-order planning – planning graphs – planning and acting in the real world

UNIT IV

UNCERTAIN KNOWLEDGE AND REASONING
Uncertainty – review of probability - probabilistic Reasoning – Bayesian networks – inferences in Bayesian networks – Temporal models – Hidden Markov models.

UNIT V

LEARNING
Learning from observation - Inductive learning – Decision trees – Explanation based learning –Statistical Learning methods - Reinforcement Learning

TEXT BOOK:
1. S. Russel and P. Norvig, "Artificial Intelligence – A Modern Approach", Second Edition, Pearson Education, 2003.

REFERENCES:
1. David Poole, Alan Mackworth, Randy Goebel, "Computational Intelligence : a logical approach", Oxford University Press, 2004.
2. G. Luger, "Artificial Intelligence: Structures and Strategies for complex problem solving", Fourth Edition, Pearson Education, 2002.
3. J. Nilsson, "Artificial Intelligence: A new Synthesis", Elsevier Publishers, 1998.

JNTUA College Of Engineering (Autonomous):: Anantapuramu
Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Introduction to Machine Learning
(Open Elective/CBCS)

Objectives:

- To understand the basic theory underlying machine learning.
- To be able to formulate machine learning problems corresponding to different applications.
- To understand a range of machine learning algorithms along with their strengths and weaknesses.
- To be able to apply machine learning algorithms to solve problems of moderate complexity.

Course Outcomes:

- Ability to understand what is learning and why it is essential to the design of intelligent machines.
- Ability to design and implement various machine learning algorithms in a wide range of real-world applications.
- Acquire knowledge deep learning and be able to implement deep learning models for language, vision, speech, decision making, and more

UNIT I INTRODUCTION

Learning Problems – Perspectives and Issues – Concept Learning – Version Spaces and Candidate Eliminations – Inductive bias – Decision Tree learning – Representation – Algorithm – Heuristic Space Search.

UNIT II NEURAL NETWORKS AND GENETIC ALGORITHMS

Neural Network Representation – Problems – Perceptrons – Multilayer Networks and Back Propagation Algorithms – Advanced Topics – Genetic Algorithms – Hypothesis Space Search – Genetic Programming – Models of Evalution and Learning.

UNIT III BAYESIAN AND COMPUTATIONAL LEARNING

Bayes Theorem – Concept Learning – Maximum Likelihood – Minimum Description Length Principle – Bayes Optimal Classifier – Gibbs Algorithm – Naïve Bayes Classifier – Bayesian Belief Network – EM Algorithm – Probability Learning – Sample Complexity – Finite and Infinite Hypothesis Spaces – Mistake Bound Model.

UNIT IV INSTANT BASED LEARNING

K- Nearest Neighbour Learning – Locally weighted Regression – Radial Bases Functions – Case Based Learning.

UNIT V ADVANCED LEARNING

Learning Sets of Rules – Sequential Covering Algorithm – Learning Rule Set – First Order Rules – Sets of First Order Rules – Induction on Inverted Deduction – Inverting Resolution – Analytical Learning – Perfect Domain Theories – Explanation Base Learning – FOCL Algorithm – Reinforcement Learning – Task – Q-Learning – Temporal Difference Learning

TEXT BOOKS:

1. Machine Learning – Tom M. Mitchell, - MGH

REFERENCE BOOKS

1. Machine Learning: An Algorithmic Perspective, Stephen Marsland, Taylor & Francis

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu
Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Software Process Management
(Open Elective/CBCS)

Objectives:

- To make predictions and commitments relative to the products it produces.
- To understand Effective measurement processes
- To develop achievable plans for producing and delivering products and services
- To identify important events and trends and that effectively separate signals from noise are invaluable in guiding software organizations to informed decisions.

UNIT-I

SOFTWARE PROCESS MATURITY:

A SOFTWARE MATURITY FRAMEWORK: Software Process Improvement, Process Maturity Levels, People in the Optimizing Process, The Need for the Optimizing Process

THE PRINCIPLES OF SOFTWARE PROCESS CHANGE: Process in Perspective, The Six Basic Principles, Some Common Misconceptions about the Software Process, A Strategy for Implementing Software Process Change

SOFTWARE PROCESS ASSESSMENT: Assessment Overview, Assessment Phases, Five Assessment Principles, The Assessment Process, Assessment Conduct, implementation Considerations

THE INITIAL PROCESS: The Nature of the Initial Process, A Case Study of a Chaotic Project, why Software Organizations are Chaotic, Software Process Entropy, The Way Out.

UNIT-II

THE REPEATABLE PROCESS:

MANAGING SOFTWARE ORGANIZATIONS: Commitment Discipline, The Management System, Establishing a Project management System

THE PROJECT PLAN: Project Planning Principles, Project Plan Contents, Size Measures, Estimating, Productivity Factors, Scheduling, Project Tracking, The Development Plan, Planning Models, Final Considerations.

SOFTWARE CONFIGURATION MANAGEMENT – PART 1: The Need for Configuration

Management, Software Product Nomenclature, Basic configuration Management Functions, Baselines, Configuration Management Responsibilities, The need for Automated Tools.

UNIT-III

THE DEFINED PROCESS:

SOFTWARE STANDARDS: Definitions, The Reasons for Software Standards, Benefits of Standards, Examples of Some Major Standards, Establishing Software Standards, Standards Versus Guidelines

SOFTWARE INSPECTIONS: Types of Reviews, Inspection Objectives, Basic Inspection Principles, The Conduct of Inspections, Inspection Training, Reports and Tracking, Other Considerations, Initiating an Inspection Program, Future Directions

SOFTWARE TESTING: Software Testing Principles, Types of Software Tests, Test Planning, Test Development, Test Execution and Reporting, Test Tools and Methods, Real-Time Testing, The Test Organization.

UNIT-IV

SOFTWARE CONFIGURATION MANAGEMENT (CONTINUED): The Software Configuration Management Plan, Software Configuration, Management Questions, SCM Support Functions, The Requirements Phase, Design Control, The Implementation Phase, Operational Data, The Test Phase, SCM for Tools, Configuration Accounting, The Software Configuration Audit

DEFINING THE SOFTWARE PROCESS: Process Standards, Definitions, Levels of Software Process Models, Prescriptive and Descriptive Uses of Models, A Software Process Architecture, Critical Software Process Issues, A Preliminary Process Architecture, Larger Process Models, Detailed Process Models, Entity Process Models, Process Model Views, Establishing and Using a Process Definition, Basic Process Guidelines

THE SOFTWARE ENGINEERING PROCESS GROUP: Changing the Software Process, The Role of the SEPG, Establishing Standards, The Process Database, Technology Insertion Focal Point, Education and Training, Process Consultation, Process Status and Assessment, Establishing the SEPG

THE MANAGED PROCESS:

DATA GATHERING AND ANALYSIS: The Principles of Data Gathering, The Data Gathering Process, Software Measures, Data Analysis.

UNIT- V

MANAGING SOFTWARE QUALITY: The Quality Management Paradigm, Quality Examples, Quality Motivation, Measurement Criteria, Establishing a Software Quality Program, Estimating Software Quality, Removal Efficiency, Quality Goals, Quality Plans, Tracking and Controlling Software Quality

THE OPTIMIZING PROCESS:

DEFECT PREVENTION: Defect Prevention Not a New Idea, The Principles of Software Defect Prevention, Process Changes for Defect Prevention, Defect Prevention Considerations, Management's Role.

Textbooks:

1. Watts S. Humphrey, "**Managing the Software Process", Pearson Edocation.**

Reference Books:

1. Watts S. Humphrey, "An Introduction to the Team Software Process", Pearson Education,2000

2. James R. Persse, "Process Improvement essentials", O'Reilly,2006

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu
Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Artificial Neural Networks
(Open Elective/CBCS)

Objectives:

To Survey of attractive applications of Artificial Neural Networks.

- To practical approach for using Artificial Neural Networks in various technical, organizational and economic applications

UNIT I: INTRODUCTION: History Of Neural Networks, Structure And Functions Of Biological And Artificial Neuron, Neural Network Architectures, Characteristics Of ANN, Basic Learning Laws and Methods.

UNIT II: SUPERVISED LEARNING: Single Layer Neural Network and architecture, McCulloch-Pitts Neuron Model, Learning Rules, Perceptron Model, Perceptron Convergence Theorem, Delta learning rule, ADALINE, Multi-Layer Neural Network and architecture, MADALINE, Back Propagation learning, Back Propagation Algorithm.

UNIT III: UNSUPERVISED LEARNING-1: Outstar Learning, Kohenen Self Organization Networks, Hamming Network And MAXNET, Learning Vector Quantization, Mexican hat.

UNIT IV: UNSUPERVISED LEARNING-2: Counter Propagation Network -Full Counter Propagation network, Forward Only Counter Propagation Network, Adaptive Resonance Theory (ART) -Architecture, Algorithms.

UNIT V : ASSOCIATIVE MEMORY NETWORKS : Introduction, Auto Associative Memory ,Hetero Associative Memory, Bidirectional Associative Memory(BAM) -Theory And Architecture, BAM Training Algorithm, Hopfield Network: Introduction, Architecture Of Hopfield Network.

TEXT BOOKS:

1. B.Yegnanarayana" Artificial neural networks" PHI ,NewDelhi.
2. S.N.Sivanandam ,S.N.Deepa, "Introduction to Neural Networks using MATLAB 6.0", TATA MCGraw- Hill publications.
3. J .M. Zurada ,"Introduction to Artificial neural systems" –Jaico publishing.

REFERENCE BOOKS:

1. S.Rajasekaran and G.A.Vijayalakshmi pai "Neural Networks.Fuzzy Logic and genetic Algorithms".
3. James A Freeman and Davis Skapura" Neural Networks Algorithm, applications and programming Techniques ", Pearson Education, 2002.
4. Simon Hakins "Neural Networks " Pearson Education.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu
Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

SERVICE ORIENTED ARCHITECTURE
(Open Elective/CBCS)

Objectives:

The course should enable the student

- Understand SOA and evolution of SOA.
- Understand web services and primitive, contemporary SOA.
- Understand various service layers.
- Understand service-oriented analysis and design based on guidelines.

UNIT I

Introducing SOA: Fundamental SOA, Common Characteristics of Contemporary SOA, Common Tangible Benefits of SOA, Common Pitfalls of Adopting SOA.

The Evolution of SOA: An SOA Timeline, The Continuing Evolution of SOA, The Roots of SOA.

UNIT II

Web Services and Primitive SOA: The Web Services Frame Work, Services, Service Descriptions, Messaging.

Web Services and Contemporary SOA (Part I-Activity management and Composition): Message Exchange Patterns, Service Activity, Coordination, Atomic Transactions, Orchestration, Choreography.

Web Services and Contemporary SOA (Part-II-Advanced Messaging, Metadata and Security): Addressing, Reliable Messaging, Correlation, Policies, Metadata exchange, Security.

UNIT III

Principles of Service-Orientation: Service–Orientation and the Enterprise, Anatomy of SOA, Common Principles of Service–Orientation, Interrelation between Principles of Service-Orientation, Service Orientation and Object Orientation, Native Web Services Support for Principles of Service-Orientation.

Service Layers: Service-Orientation and Contemporary SOA, Service Layer abstraction, Application Service Layer, Business Service Layer, Orchestration Service Layer, Agnostic Services, Service Layer Configuration Scenarios.

UNIT IV

SOA Delivery Strategies: SOA Delivery Lifecycle Phases, The Top-Down Strategy, The Bottom-up Strategy, The Agile Strategy.

Service Oriented Analysis (Part I-Introduction): Introduction to Service Oriented Analysis, Benefits of a Business Centric SOA, Deriving Business Services.

Service Oriented Analysis (Part-II-Service Modelling): Service Modeling, Service Modelling Guidelines, Classifying Service Model Logic, Contrasting Service Modeling Approaches.

Service Oriented Design (Part I-Introduction): Introduction to Service-Oriented Design, WSDL Related XML Schema Language Basics, WSDL Language Basics, Service Interface Design Tools.

Service Oriented Design (Part II-SOA Composition Guidelines): SOA Composing Steps, Considerations for Choosing Service Layers, Considerations for Positioning Core SOA Standards, Considerations for Choosing SOA Extensions.

UNIT V

Service Oriented Design (Part III- Service Design): Service Design Overview, Entity-Centric Business Service Design, Application Service Design, Task-Centric Business Service Design, Service Design Guidelines.

Service Oriented Design (Part IV-Business Process Design): WS-BPEL Language Basics, WS-Coordination Overview, Service Oriented Business Process Design.

TEXT BOOKS:

1. Service-Oriented Architecture-Concepts, Technology, and Design, Thomas Erl, Pearson Education.
2. Understanding SOA with Web Services, Eric Newcomer, Greg Lomow, Pearson Education.

REFERENCE BOOKS:

1. The Definitive guide to SOA, Jeff Davies & others, Apress, Dreamtech.
2. Java SOA Cook book, E.Hewitt, SPD.
3. SOA in Practice, N.M.Josuttis, SPD.
4. Applied SOA, M.Rosen and others, Wiley India pvt. Ltd.
5. Java Web Services Architecture, J.Mc Govern, and others, Morgan Kaufmann Publishers, Elsevier.
6. SOA for Enterprise Applications, Shankar.K, Wiley India Edition.
7. SOA-Based Enterprise Integration, W.Roshen, TMH.
8. SOA Security, K.Rama Rao, C.Prasad, dreamtech press.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	T	P	C
	0	3	2

Security and Cloud Computing Lab

Course Objective/Outcomes

- Understand the basic functions of each layer in the reference models
- Students will be able to simulate the algorithms for flow control, error control and routing protocols
- Understand the basics of the cryptographic algorithms
- Students can able to program enterprise clouds and to analyze data on clouds using Aneka.
- Students learn and understand tools and techniques for using, designing, and implementing clouds as well as services.

Part - A

1. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP.
3. Implement Dijkstra‘s algorithm to compute the Shortest path thru a graph.
4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table at each node using distance vector routing algorithm.
5. Take an example subnet of hosts. Obtain broadcast tree for it.
6. Implement one bit sliding window protocol
7. Implement sliding window protocol with Go-back n
8. Implement sliding window protocol using Selective repeat.
9. Take a 64 bit playing text and encrypt the same using DES algorithm.
10. Write a program to break the above DES coding.
11. Using RSA algorithm encrypt a text data and Decrypt the same.

Part –B

3. Write a program to print “Hello World” using Aneka Thread Programming model use Single Thread.
4. Write a program to print “Hello World” based in thread model and use exactly five threads also print the executor node information along with the submission time and completion time.
5. Write a program to print “Hello World” using Aneka Thread Programming model and

conventional thread and understand the differences.

6. Write a program to compute the following mathematical equation using Aneka Threads (Note: Consider each trigonometric function in independent thread)?

   $P = \sin(x) + \cos(y) + \tan(z)$.

7. Write a program to print "Hello World" using Aneka Task Programming model.
8. Write a program to sum the two numbers using Aneka Task Programming model.
9. Write a program to print "Hello World" using Aneka Thread Programming model use Five Threads , also print the Node Ids on which the threads are executed and submission time and Completion Time of the Threads.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – I Sem. (C.S.E)	T	P	C
	0	3	2

MOBILE APPLICATION DEVELOPMENT LAB

Course Objectives:
In this lab, a student is expected to design, implement, document and present a mobile client/server system using standard Java and Java 2 Micro Edition (J2ME) platform. Specifically it is required to design and implement a system that consists mainly of a mobile client (MC) and a Proxy Server (PS). MC will be written in J2ME, MIDP 2.0, while PS will be written in standard Java. It is necessary to use a mobile phone emulator to develop and demonstrate the experiments.
It may be necessary to use other components or existing resources (servers) as needed. For instance a database local to PS or a web service available on the Internet that can be invoked by the PS.

Week - 1: Installation of Java Wireless Toolkit (J2ME)

1) If the Java Development Kit (JDK) is not there or only having the Java Runtime Environment (JRE) installed, install the latest JDK from http://java.sun.com/javase/downloads/index.jsp. Current stable release of Java is JDK 6 Update 7 but check the web page in case there are newer non-beta releases available.
2) Next, download the Java Wireless Toolkit (formerly called J2ME Wireless Toolkit) from: http://java.sun.com/products/sjwtoolkit/download.html.
3) Run the installer (for example, for Windows it is: sun_java_wireless_toolkit- 2_5_2-windows.exe). The installer checks whether a compatible Java environment has been pre-installed. If not, it is necessary to uninstall old versions of Java and perform Step 1 again.
Once after successful installation of Java and the tool kit compile this program and run the following program in the toolkit.
Steps to run this program in toolkit:

1. Start -> All Programs -> Sun Java Tool Kit -> Wireless Tool Kit
2. Click New Project – Enter Project Name -> Enter Class Name -> Click on Create Project.
3. Choose appropriate API Selection and Configurations.
4. Place Java Source file in WTK2.1 / WTK2.2\apps\projectname\src
5. Build the Project.
6. Run the Project.

```
import javax.microedition.lcdui.*;
import javax.microedition.midlet.*;

public class HelloWorld extends MIDlet{
  private Form form;
```

```
  private Display display;

  public HelloWorld(){
    super();
  }

  public void startApp(){
    form = new Form("Hello World");
    String msg = "Hello World!!!!!!!";
    form.append(msg);
    display = Display.getDisplay(this);
    display.setCurrent(form);
  }

  public void pauseApp(){}

  public void destroyApp(boolean unconditional){
    notifyDestroyed();
  }
}
```

Week - 2 Working with J2ME Features:

Working with J2ME Features: Say, creating a Hello World program Experiment with the most basic features and mobile application interaction concepts (lists, text boxes, buttons, radio boxes, soft buttons, graphics, etc)

2.1 Create a program which creates to following kind of menu.

* cut
* copy
* past
* delete
* select all
* unselect all

2.2 Event Handling.

Create a menu which has the following options:

* cut - can be on/off
* copy - can be on/off
* paste - can be on/off
* delete - can be on/off
* select all - put all 4 options on
* unselect all - put all 4 options off

2.3. Input checking

Create an MIDP application which examine, that a phone number, which a user has entered is in the given format.

* Area code should be one of the following: 040, 041, 050, 0400, 044
* There should 6-8 numbers in telephone number (+ area code)

Week - 3 Threads & High Level UI:

3.1. Create a slide show which has three slides, which includes only text. Program should change to the new

slide after 5 seconds. After the third slide program returns to the first slide.

3.2 High-level UI
Create a MIDP application, which show to the user 5-10 quiz questions. All questions have 4 possible options and one right option exactly. Application counts and shows to the user how many right answers were right and shows them to user.

3.3 Create a MIDP application, where the user can enter player name and points. The program saves the information to the record using RMS at MIDP device. Program should also print out the top 10 player list to the end user. You can use this class in your game if you made own class for saving and reading record sets.

Week - 4 Working on Drawing and Images

4.1 Create a slide show which has three slides, which includes pictures at PNG format. Program should change to the new slide other 5 seconds.

4.2 Create a MIDP application, which draws a bar graph to the display. Data values can be given at int[] array.

4.3 Create a MIDP application, which draws a bar graph to the display. Data values can be given at int[] array. You can enter four data (integer) values to the input text field.

Week - 5 Developing Networked Applications using the Wireless Toolkit

Creating a Simple Client-Server Application
Create, compile and run a basic UDP-based client-server application.
Creating the Datagram Server project
1) Click on Wireless Toolkit 2.5.2 under the group: All Programs→Sun Java
(TM) Wireless Toolkit 2.5.2.
2) Click on 'New Project...' button.
3) Enter project name as 'DatagramServer'. Enter MIDlet name as 'DatagramServer'. Note that the Midlet name is the same as the name of the class in the source code, which extends the MIDlet class, otherwise the application won't run.
4) Another window pops up where it is required to select a target platform. Select 'MIDP 1.0' from the drop down list.
5) After clicking OK, the project is created; and the Wireless Toolkit tells that the name of the folder where source code files are created. The path of the source code folder is displayed in the debug output window.

Creating and Compiling the DatagramServer source files

The Wireless Toolkit does not come with an IDE by default so Use any IDE or a text editor like Notepad.
1) Create a new text file called DatagramServer.java in the source folder of the project. The exact path of this folder is displayed in the Wireless Toolkit window.
2) Paste contents DatagramServer.java from into the source file.

Running your Server application on the Phone simulator

1) After compiling the project successfully, click on the Run button in the Wireless Toolkit window.
2) A graphical window depicting a phone handset will appear with the name of your application highlighted on its screen as shown below.

3) To start the application, click on the right soft-key (marked with a dot) below the ‘Launch’ command.
4) The phone simulator might ask if it is OK to run the network application. Select ‘Yes’ by clicking on the appropriate soft-key. The server is now up and running.
5) Keep the server running during the creation, compilation and running of the Datagram Client application.

Creating the DatagramClient project

1) Use the same instance of the Wireless Toolkit that is used for creating and compiling the Datagram Server project.
2) Click on 'New Project...' button.
3) A new window pops up. Enter project name as 'DatagramClient'. Enter MIDlet name as 'DatagramClient'. Note that the Midlet name is the same as the name of the class in the source code, which extends the MIDlet class.
4) Another window pops up where one has to select a target platform. Select 'MIDP 1.0' from the drop down list.
5) After clicking OK, the project is created and the Wireless Toolkit tells where to place the source code files. The path of the source code folder is displayed in the debug output window as explained before.

Creating and Compiling the DatagramClient source files

1) Create a new text file called DatagramClient.java in the source folder of the project.
2) Paste contents DatagramClient.java into the source file.
3) Then click on the Build button in the Wireless Toolkit window. If the compilation is OK, it will say Build Complete in the window's debug output window, otherwise it will show the errors. Note: In the source code, use the System.out.println() statement to output debug information to this window.

Running your Client application on the Phone simulator

1) After compiling the project successfully, click on the Run button in the Wireless Toolkit window.
2) A graphical window depicting a phone handset will appear with the name of the application highlighted on its screen.
3) To start the application, click on the right soft-key (marked with a dot) below the ‘Launch’ command.
4) The phone simulator might ask if it is OK to run the network application. Select ‘Yes’ by clicking on the appropriate soft-key. The client is now up and running.
5) When the client executes on the phone simulator, one should see a text box with the caption 'Message'. Enter any message and press the right soft-key (corresponding to Send). If the client-server application is working properly, the screen of the server phone will display the message sent by the client and the client screen will now display a message sent by the server in response. The response message from the server is the original client message in reverse.
6) Try various features of the phone simulator including the different look-and feel options.

Week - 6 Authentication with a Web Server

6.1 Write a sample program to show how to make a SOCKET Connection from j2me phone.
This J2ME sample program shows how to how to make a SOCKET Connection from a J2ME Phone. Many a times there is a need to connect backend HTTP server from the J2ME application. shows how to make a SOCKET connection from the phone to port 80.
6.2 Login to HTTP Server from a J2ME Program
This J2ME sample program shows how to display a simple LOGIN SCREEN on the J2ME phone and how to authenticate to a HTTP server.
Many J2ME applications for security reasons require the authentication of the user. This free J2ME sample program, shows how a J2ME application can do authentication to the backend server.
Note: Use Apache Tomcat Server as Web Server and Mysql as Database Server.

2013-2014

Week - 7 & 8 Web Application using J2ME

The following should be carried out with respect to the given set of application domains: (Assume that the Server is connected to the well-maintained database of the given domain. Mobile Client is to be connected to the Server and fetch the required data value/information)

- Students Marks Enquiry
- Town/City Movie Enquiry
- Railway/Road/Air (For example PNR) Enquiry/Status
- Sports (say, Cricket) Update
- Town/City Weather Update
- Public Exams (say Intermediate or SSC)/ Entrance (Say EAMCET) Results Enquiry

Divide Students into Batches and suggest them to design database according to their domains and render information according to their requests.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – II Sem. (C.S.E)	L	T	C
	3	1	3

MANAGEMENT SCIENCE

Course Objective*: The objective of the course, is to equip the student the fundamental knowledge of management science and its application for effective management of human resource, materials and operation of an organization. It also aims to expose the students about the latest and contemporary developments in the field of management.*

UNIT I

INTRODUCTION TO MANAGEMENT:
Management-Concept and meaning-Nature-Functions-Management as a science and art and both. Schools of management thought-Taylor's scientific theory-Henry Fayol's principles-Weber's Ideal Bureaucracy-Eltan Mayo's Human relations-Systems theory- Situational or Contingency theory-Social responsibilities of management.**Organizational structure and design**: Features of organizational structure-work specialization-Departmentation-Span of control-Centralization and Decentralization. **Organisational designs**-Line organization-Line & Staff Organization-Functional Organization-Matrix Organization-Project Organization-Committee form of organization.

UNIT II
OPERATIONS MANAGEMENT:
Principles and Types of Plant Layout-Methods of production (Job, batch and Mass Production), Work Study-Statistical Quality Control**:** *C* chart, *P* chart, (simple Problems) Deming's contribution to quality. **Material Management:** Objectives-Inventory-Functions,types, inventory classification techniques-EOQ-ABC Analysis-Purchase Procedure and Stores Management. **Marketing Management:** Concept- Meaning - Nature-Functions of Marketing- Marketing Mix- Channels of distribution -Advertisement and sales promotion- Marketing Strategies based on Product Life Cycle.

UNIT III
HUMAN RESOURCES MANAGEMENT (HRM):
HRM- Definition and meaning – nature-Managerial and Operative functions-Evolution of HRM-Human Resource Planning(HRP)-Employee Recruitment-sources of recruitment-employee selection- process and tests in employee selection- Employee training and development-On- the- job and Off- the- job training methods-Performance Appraisal systems-Concept-Methods of Performance Appraisal-Placement-Employee Induction-Wage and Salary Administration-Objectives-Essentials of Wage and Salary Administration-Job Analysis-Process -Job Evaluation-Employee Grievances-techniques of handling Grievances.

UNIT IV
STRATEGIC MANAGEMENT:
Definition& meaning-Setting of Vision- Mission- Goals- Corporate Planning Process- Environmental Scanning-Steps in Strategy Formulation and Implementation-SWOT Analysis. **Project Management (PERT/CPM):**Network Analysis- Programme Evaluation and Review Technique (PERT), Critical Path

Method (CPM), Identifying Critical Path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing. (Simple problems).

UNIT V

CONTEMPORARY ISSUES IN MANAGEMENT:
The concept of MIS- Materials Requirement Planning (MRP)- Just-In-Time (JIT) System- Total Quality Management (TQM)- Six Sigma Concept- Supply Chain Management- Enterprise Resource Planning (ERP)- Performance Management- Business Process Outsourcing (BPO), Business Process Re-engineering and Bench Marking -Balanced Score Card-Knowledge Management.

The students are required to submit any one of the following- two assignments/ a mini project/submission of any two case studies in the subject.

Learning Outcome: After completion of this course, the prospective engineering technocrats will be able to understand various fundamentals of functional areas such general management, plant and materials management, marketing management, human resource management, statistical quality control techniques, strategic management and also aware of the latest and contemporary issues of management science.

TEXT BOOKS:
1. A.R Aryasri: Management Science, TMH, 2013
2. Stoner, Freeman, Gilbert, Management, Pearson Education,New Delhi, 2012.
REFERENCE BOOKS:
1. Kotler Philip & Keller Kevin Lane: Marketing Mangement , PHI,2013.
2. Koontz & Weihrich: Essentials of Management, 6/e, TMH, 2005.
3. Thomas N.Duening & John M.Ivancevich ManagementPrinciples and Guidelines,Biztantra.
4. Kanishka Bedi, Production and Operations Management, Oxford University Press, 2004.
5. Memoria & S.V.Gauker, Personnel Management, Himalaya, 25/e, 2005
6. Samuel C.Certo: Modern Management, 9/e, PHI, 2005
7. Schermerhorn, Capling, Poole & Wiesner: Management, Wiley, 2002.
8. Parnell: Strategic Management, Biztantra, 2003.
9. Lawrence R Jauch, R.Gupta &William F.Glueck: Business Policy and Strategic Management, Frank Bros., 2005.
10. L.S.Srinath: PERT/CPM,Affiliated East-West Press, 2005.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – II Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Design Patterns

Course Objective

- To understand design patterns and their underlying object oriented concepts.
- To understand implementation of design patterns and providing solutions to real world software design problems.
- To understand patterns with each other and understanding the consequences of combining patterns on the overall quality of a system.

Course Outcomes

- Know the underlying object oriented principles of design patterns.
- Understand the context in which the pattern can be applied.
- Understand how the application of a pattern affects the system quality and its tradeoffs.

UNIT-I

Introduction: What Is a Design Pattern?, Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern.

UNIT-II

A Case Study: Designing a Document Editor : 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, Summary .

Creational Patterns : Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.

UNIT-III

Structural Pattern Part-I : Adapter, Bridge, Composite.

Structural Pattern Part-II : Decorator, açade, Flyweight, Proxy.

UNIT-IV

Behavioral Patterns Part-I : Chain of Responsibility, Command, Interpreter, Iterator.
Behavioral Patterns Part-II : Mediator, Memento, Observer.

UNIT-V

Behavioral Patterns Part-II (cont'd):State, Strategy, Template Method ,Visitor, Discussion of Behavioral Patterns.
What to Expect from Design Patterns, A Brief History, The Pattern Community An Invitation, A Parting Thought.

TEXT BOOK :

1. Design Patterns By Erich Gamma, Pearson Education

REFERENCE BOOKS:

1. Pattern's in JAVA Vol-I By Mark Grand, Wiley DreamTech.
2. Pattern's in JAVA Vol-II By Mark Grand, Wiley DreamTech.
3. JAVA Enterprise Design Patterns Vol-III By Mark Grand, Wiley DreamTech.
4. Head First Design Patterns By Eric Freeman-Oreilly-spd
5. Design Patterns Explained By Alan Shalloway,Pearson Education.
6. Pattern Oriented Software Architecture, F.Buschmann &others, John Wiley & Sons.

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – II Sem. (C.S.E)	L	T	C
	3	1	3

MOBILE COMPUTING
(Elective II)

Course Objective:

- To make the students understand the basic information about mobile computing and its concepts such as Applications, Impediments, Architecture, New Data Services like GPRS, CSHSD, DECT, Mobile IP Networks, MANET's and Linux for Mobile devices.
- To get acquaintance with the class of abstractions offered by the mobile computing system that develops the User App applications

Learning Outcome:

- Students able to use mobile computing more effectively
- Developing mobile application programs to exploit the mobile operating system

UNIT I

Introduction: MobileCommunications,Mobile Computing–Paradigm,Promises/Novel Applications and Impediments and Architecture; Mobile and Handheld Devices, Limitations of Mobile and Handheld Devices.
GSM – Services, System Architecture, Radio Interfaces, Protocols, Localization, Calling, Handover, Security, New Data Services, GPRS, CSHSD, DECT.

UNIT –II
Medium Access Controlin Wireless(MAC): 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.

Mobile IP Network Layer: IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Location Management, Registration, Tunneling and Encapsulation, Route Optimization, DHCP.

UNIT –III
Mobile Transport Layer: Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Transport Layer Protocols for Mobile Networks.

Database Issues: Database Hoarding & Caching Techniques, C–S Computing & Adaptation, Transactional Models, Query processing, Data Recovery Process & QoS Issues.

UNIT –IV
Data Dissemination and Synchronization: Communications Asymmetry, Classification of Data Delivery Mechanisms, Data Dissemination Broadcast Models, Selective Tuning and Indexing Methods, Digital Audio and Video Broadcasting (DAB & DVB). Data Synchronization – Introduction, Software, and Protocols

UNIT V

Mobile Ad hoc Networks (MANETs): Introduction, Applications & Challenges of a MANET, Routing, Classification of Routing Algorithms, Algorithms such as DSR, AODV, DSDV, etc., Mobile Agents, Service Discovery.

Protocols and Platforms for Mobile Computing: WAP, Bluetooth, XML, J2ME, Java Card, PalmOS, Windows CE, SymbianOS, Linux for Mobile Devices.

TEXT BOOKS:

1. Raj Kamal, "Mobile Computing", Oxford University Press, 2007, ISBN: 0195686772

REFERENCE BOOKS:

1. Jochen Schiller, "Mobile Communications", Addison-Wesley, Second Edition, 2004.
2. Stojmenovic and Cacute, "Handbook ofWireless Networks and Mobile Computing", Wiley, 2002, ISBN 0471419028.
3. Reza Behravanfar, "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", ISBN: 0521817331, Cambridge University Press,Oct 2004,

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – II Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Software Project Management

(ELECTIVE-II)

Course Objective

- Understanding the specific roles within a software organization as related to project and process management.
- Understanding the basic infrastructures competences (e.g., process modeling and measurements.)
- Describe the principles, techniques, methods & tools for model based management of software projects, assurance of product quality and process adherence (quality assurance), as well as experienced based creation and improvements of models (process management) .
- Understanding the basic steps of project planning, project management, quality assurance, and process management and their relationships.
- To provide basic project management skills with a strong emphasis on issues and problems associated with delivering successful IT projects.

Course Outcomes

- To describe and determine the purpose and importance of project management from the perspectives of planning, tracking and completion of project.
- To compare and differentiate organization structures and project structures.
- To implement a project to manage project schedule, expenses and resources with the application of suitable project management tools.
- Understand and practice the process of project management and its application in delivering successful IT projects.

UNIT I

Conventional Software Management: The waterfall model, conventional software Management performance. Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

UNIT II

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

The old way and the new : The principles of conventional software engineering, principles of modern software management, transitioning to an iterative process.

UNIT III

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. Model based software architectures: A Management perspective and technical perspective.

UNIT IV

Work Flows of the process: Software process workflows, Inter Trans 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, Interaction planning process, Pragmatic planning.

ProjectOrganizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building Blocks, The Project Environment.

UNIT V

Project Control and Process instrumentation: The server care Metrics, Management indicators, quality indicators, life cycle expectations pragmatic Software Metrics, Metrics automation. Tailoring the Process: Process discriminates, Example.

Future Software Project Management: Modern Project Profiles, Next generationSoftware economics, modern Process transitions.

Case Study: The Command Center Processing and Display System-Replacement (CCPDS-R)

TEXT BOOKS:

1. Software Project Management, Walker Royce, Pearson Education, 2012
2. Software Project Management, Bob Hughes & Mike Cotterell, fourth edition,TataMc-Graw Hill,2006

REFERENCE BOOKS:

1. Applied Software Project Management, Andrew Stellman& Jennifer Greene,O'Reilly, 2006
2. Head First PMP, Jennifer Greene & Andrew Stellman, O'Reilly,2007
3. Software Engineering Project Managent, Richard H. Thayer & Edward Yourdon, second edition, Wiley India, 2004.
4. Agile Project Management, Jim Highsmith, Pearson education, 2004
5. The art of Project management, Scott Berkun, O'Reilly, 2005.
6. Software Project Management in Practice, PankajJalote, Pearson Education,2002.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – II Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Pattern Recognition

Elective- II

Course Objective

The objective of this course is to enable the students to understand thefundamentals of

- Pattern recognition. The students should learn to choose an appropriate feature
- Pattern classification algorithm for a pattern recognition problem,properly implement the algorithm using modern computing tools such as Matlab, OpenCV, C, C++ and correctly.
- Analyze, and report the results using proper technical terminology

Course Outcomes

- Student understands the fundamental pattern recognition and machine learning theories
- Student has the ability to design and implement certain important pattern recognition techniques
- Student has the capability of applying the pattern recognition theories to applications of interest.

Unit - I :

Introduction to Pattern Recognition: Data Sets for Pattern Recognition, Different Paradigms for Pattern Recognition,

Pattern Representation: Data Structures for Pattern Representation, Representation of Clusters, Proximity Measures, Size of Patterns, Abstractions of the Data Set, Feature, Feature Selection, Evaluation of Classifiers, Evaluation of Clustering

Unit – II:

Nearest Neighbour Based Classifiers: Nearest Neighbour Algorithm, Variants of the NN Algorithm , Use of the Nearest Neighbour Algorithm for Transaction Databases, Efficient Algorithms, Data Reduction, Prototype Selection,

Bayes Classifier: Bayes Theorem, Minimum error rate classifier, Estimation of Probabilities, Comparison with the NNC, Naive Bayes Classifier, Bayesian Belief Network.

Unit – III :

Hidden Markov Models: Markov Models for Classification, Hidden Markov Models, Classification Using HMMs, Classification of Test Patterns.

Decision Trees: Introduction, Decision Trees for Pattern Classification, Construction of Decision Trees, Splitting at the Nodes, Over fitting and Pruning, Example of Decision Tree Induction.

Unit – IV :

Support Vector Machines: Introduction, Linear Discriminant Functions, Learning the Linear Discriminant Function, Neural Networks, SVM for Classification, Linearly Separable Case, Non-linearly Separable Case.

Combination of Classifiers: Introduction, Methods for Constructing Ensembles of Classifiers, Methods for Combining Classifiers, Evaluation of Classifiers, Evaluation of Clustering

Unit – V :

Clustering: Clustering and its Importance, Hierarchical Algorithms, Partitional Clustering, Clustering Large Data Sets, An Application to Handwritten Digit Recognition: Description of the Digit Data, Pre-processing of Data, Classification Algorithms, Selection of Representative Patterns.

Text Books :

7. Pattern Recognition an Introduction, V. Susheela Devi M. NarasimhaMurty, University Press.
8. Pattern Recognition, SegriosTheodoridis,KonstantinosKoutroumbas, Fourth Edition, Elsevier

Reference Books :

1. Pattern Recognition and Image Analysis, Earl Gose, Richard John Baugh, Steve Jost, PHI 2004.
2. C. M. Bishop, 'Neural Networks for Pattern Recognition', Oxford University Press, Indian Edition, 2003.
3. Pattern Classification, R.O.Duda, P.E.Hart and D.G.Stork, Johy Wiley, 2002

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – II Sem. (C.S.E)	L	T	C
	3	1	3

Computer Graphics and Multimedia

(Elective - II)

Course Objective

- To know about different graphics hardware
- To study different techniques and algorithms related to Computer Graphics.
- To make the students understand the creation, storage, and manipulation of models and images of objects.
- Understand the basic concepts of multimedia and gain the skills required to work with them

Course Outcomes

- Ability to develop programs to control the content, structure and appearance of objects.

Ability to design, organize and produce multimedia projects of all kinds

UNIT I

Introduction: Computer-Aided design, Presentation graphics, Computer Art, Entertainment, Education and Training, Visualization, Image processing, Graphics user interfaces.

Graphics Systems: Video display devices, Raster scan systems, Random scan systems, Graphics monitors and workstations, Input devices, Hard-copy devices, Graphics software

UNIT II

Basic Graphic algorithms: Overview, Scan converting lines, Scan converting Circles, Scan converting Ellipse, Filling rectangles, Filling polygons, Filling ellipse Arcs, Pattern filling, Clipping lines, Clipping circles and ellipse, Clipping polygons, Generating characters.

Geometrical Transformations: 2D Transformation, Homogeneous co-ordinates and matrix representation of 2D transformations, Composition of 2D transformations, The window-to-view port transformation, Efficiency.

3D Transformations: Matrix representation of 3D transformations, Composition of 3D transformations, Transformations as a change in coordinate system.

UNIT III

Viewing in 3D: Projections, Specifying an arbitrary 3D view, Examples of 3D viewing.

Curves and surfaces: Polygon meshes, Parametric cubic curves: Hermite curves, Bezier curves, Uniform non rational B-splines, Non uniform Non rational B-splines

Parametric Bicubic surfaces: Hermite surfaces, Bezier surfaces, B-spline surfaces

Visual realism: Why realism, Fundamental difficulties,Rendering techniques for line drawings, Rendering techniques for shaded images, Dynamics.

UNIT IV

Visible surface determination: Functions of two variables, Techniques for efficient visible surface algorithms, Algorithms for visible-line determination, The z-buffer algorithm, List priority algorithms, Scan line algorithms

Illumination and Shading: Illumination models, Shading models for polygons, Surface detail, Shadows, Transparency

UNIT V

Multimedia: Where to use multimedia, Text: The power of meaning, About fonts and faces, Images: Before you start to create, Making still images, colour, Sound: The power of sound, Digital audio, MIDI Audio, MIDI Vs Digital audio, Multimedia system sounds, Audio File formats, Animation, Video: Using video, How video works and is displayed, Digital video containers

Text Books

1. Computer Graphics C version", Donald Hearn and M. Pauline Baker, 2nd edition, 2011, Pearson.
2. "Computer Graphics Principles and Practice in C", Foley, Dam, Feiner, John, 2nd Edition, 2013, Pearson.

"Multimedia: Making It Work", , Tay Vaughan, 8th Edition, 2011, Tata McGrawHill Edition

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – II Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Optimization Techniques

Course Objective

- To understand the theory of optimization methods and algorithms developed for solving various types of optimization problems.
- To develop and promote research interest in applying optimization techniques in problems of Engineering and Technology.
- To apply the mathematical results and numerical techniques of optimization theory to concrete Engineering problems.

Course Outcomes

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

- Use various optimization techniques such as Quadratic programming, Dynamic Programming and select the ones most suitable to the problem at hand.
- Subdivide a complex system in to smaller disciplinary models, manage their interfaces and reintegrate them in to an overall system model.
- Rationalize and quantify a system architecture or product design problem by selecting appropriate objective function, design variables, parameters and constraints.
- Interpret the mathematical conditions for optimality and give physical explanation.
- Make recommendations based on solutions, analysis and limitations of models.

UNIT I

Introduction to optimization: Requirements for the Application of Optimization Methods, Applications of Optimization in Engineering, Structure of Optimization Problems, Functions of a Single Variable: Properties of Single-Variable Functions, Optimality Criteria, Region Elimination Methods, Polynomial Approximation or Point Estimation Methods.

UNIT II

Functions of a Several Variables: Optimality Criteria, Direct-Search Methods, Gradient Based Methods, Comparison of Methods and Numerical Results.

UNIT III

Linear Programming: Formulation of Linear Programming Models, Graphical Solution of Linear Programming in Two Variables, Linear Programming in Standard Form, Principles of the Simplex Method, Applications.

UNIT IV

Constrained Optimality Criteria: Equality-Constrained Problems, Lagrange Multipliers, Economic Interpretation of Lagrange Multipliers, Kuhn-Tucker Conditions, Kuhn-Tucker Theorems, Saddle point Conditions, Second-Order Optimality Conditions, Generalized Lagrange Multiplier Method, and Generalization of Convex Functions.

UNIT V

Transformation Methods: Penalty Concept, Algorithms, Codes, and Other Contributions, Method of Multipliers, Constrained Direct Search: Problem Preparation, Adaptations of Unconstrained Search Methods, Random-Search Methods.

TEXT BOOKS:

1. Engineering Optimization- Methods and Applications, A.Ravindran, K. M. Ragsdell, G.V. Reklaitis, Second Edition, Wiley India Edition.

2. Introductory Operation Research- Theory and Applications, H.S. Kasana, K.D. Kumar, Springer International Edition.

REFERENCES:

1. Optimization Methods in Operations Research and Systems Analysis, K.V. Mital and C. Mohan, New Age International (P)Limited, Publishers, Third Edition, 1996.

2. Operations Research, Dr. J.K.Sharma, Mc Millan.

3. Operations Research: An Introduction, H.A. Taha, PHI Pvt. Ltd.,

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – II Sem. (C.S.E)	**L**	**T**	**C**
	3	**1**	**3**

Embedded Systems

(Elective-III)

Course Objective

- Study embedded computer system hardware
- Study Design, implement, and debug multi-threaded application software that operates under real-time constraints on embedded computer systems
- Use and describe the implementation of a real-time operating system on an embedded computer system
- Formulate an embedded computer system design problem including multiple constraints, create a design that satisfies the constraints.
- Create computer software and hardware implementations that operate according to well-known standards

Course Outcomes

- Design embedded computer system hardware
- Design embedded computer software
- Design realtime operating 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, Interrupt Routines in an RTOS Environment.

Unit – IV :

Basic Design Using a Real-Time Operating System: Principles, Semaphores and Queues, HardReal-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. "Computers and Components", Wayne Wolf, Elseveir.
2. "The 8051 Microcontroller", Kenneth J.Ayala, Thomson.
3. "An Embedded Software Primer", David E. Simon, Pearson Education

Reference Books :

1. "Embedding system building blocks", Labrosse, via CMP publishers.
2. "Embedded Systems", Raj Kamal, TMH.
3. "Micro Controllers", Ajay V Deshmukhi, TMH.
4. "Embedded System Design", Frank Vahid, Tony Givargis, John Wiley.
5. "Microcontrollers", Raj kamal, Pearson Education
6. "Embedded Systems", Lyla B. Das, Pearson

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – II Sem. (C.S.E)	L	T	C
	3	1	3

NATURAL LANGUAGE PROCESSING

(Elective III)

Objectives

Upon completion, students will be able to explain and apply fundamental algorithms and techniques in the area natural language processing (NLP). In particular, students will:

- Understand approaches to syntax and semantics in NLP.
- Understand current methods for statistical approaches to machine translation.
- Understand language modeling.
- Understand machine learning techniques used in NLP.

UNIT – I

Introduction to Natural Language Understanding, Syntactic Processing: Grammars and Parsing

UNIT-II:

Features and Augmented Grammars, Toward Efficient Parsing, Ambiguity Resolution

UNIT –III

Statistical Methods: Probabilistic Context-Free Grammars, Best-First Parsing.

UNIT-IV

Semantic Interpretation: Linking Syntax and Semantics, Ambiguity Resolution, other Strategies for Semantic Interpretation.

UNIT-V

Context and World Knowledge: Using World Knowledge, Discourse Structure, Defining a Conversational Agent.

TEXT BOOK:

1. Natural Language Understanding – James Allen, Second Edition, Pearson Education.

REFERENCE BOOKS:

1. Speech and Language Processing – Daniel Jurafsky, James H.Martin.

2. Foundations of Statistical Natural Language Processing – Christopher Manning, Hinrich Schutze, MIT Press.

3. Charniack, Eugene, Statistical Language Learning, MIT Press, 1993.

4. Jurafsky, Dan and Martin, James, Speech and Language Processing, 2nd Edition, Prentice Hall,

2008.
5. Manning, Christopher and Henrich, Schutze, Foundations of Statistical Natural Language Processing, MIT Press, 1999.

2013-2014

JNTUA College Of Engineering (Autonomous):: Anantapuramu

Department of Computer Science & Engineering

B.Tech. IV – II Sem. (C.S.E)	L	T	C
	3	1	3

Data Analytics – III

(Elective-III)

Unit I

Introduction to Predictive Analytics & Linear Regression (NOS 2101)

What and Why Analytics, Introduction to Tools and Environment, Application of Modelling in Business, Databases & Types of data and variables, Data Modelling Techniques, Missing imputations etc.

Need for Business Modelling, Regression – Concepts, Blue property-assumptions-Least Square Estimation, Variable Rationalization, and Model Building etc.

Unit II

Logistic Regression Objective Segmentation (NOS 2101)

Model Theory, Model fit Statistics, Model Conclusion, Analytics applications to various Business Domains etc.

Regression Vs Segmentation – Supervised and Unsupervised Learning, Tree Building – Regression, Classification, Overfitting, Pruning and complexity, Multiple Decision Trees etc.

Unit III

Time Series Mothods/Forecasting, Feature Extraction (NOS 2101)

Arima, Measures of Forecast Accuracy, STL approach, Extract features from generated model as Height, Average, Energy etc and Analyze for prediction.

Unit IV

Working with Documents (NOS 0703)

Standard Operating Procedures for documentation and knowledge sharing, Defining purpose and scope documents, Understanding structure of documents – case studies, articles, white papers, technical reports, minutes of meeting etc., Style and format, Intectual Property and Copyright, Document preparation tools – Visio, PowerPoint, Word, Excel etc., Version Control, Accessing and updating corporate knowledge base, Peer review and feedback.

Unit V

Develop Knowledge, Skill and Competences (NOS 9005)

Introduction to Knowledge skills & competences, Training & Development, Learning & Development, Policies and Record keeping, etc.

Text Books:

1. **Student's Handbook for Associate Analytics-III.**

Reference Books and websites:

1. Gareth James • Daniela Witten • Trevor Hastie Robert Tibshirani. An Introduction to Statistical Learning with Applications in R