JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

COURSE STURUCTURE - R10
COMMON TO BRANCHES

(CSE, EEE, CE, EIE, AE, BT, AME,)
I Year

	I Semester	P	C		II Semester	P	C
1	English – I	3	2	1	English – II	3	2
2	Mathematics - I	3+1	2	2	Mathematics – II	3+1	2
3	Engineering Physics – I	3+1	2	3	Engineering Physics – II	3+1	2
4	Engineering Chemistry I	3	2	4	Engineering Chemistry-- II	3	2
5	C Programming	3	2	5	Engineering Drawing	1+3	2
6	Mathematical Methods	3+1	2	6	Environmental Studies	3	2
7	Engineering Physics & Engineering Chemistry Laboratory -I	3	2	7	Engineering Physics & Engineering Chemistry Laboratory -II	3	2
8	Engineering Workshop (Carpentry, Fitting, House wiring,)	3	2	8	English - Communication Skills Lab -II	3	2
9	C Programming Lab	3	2	9	IT Workshop	3	2
10	English Communication Skills Lab - I	3	2				
		33	**20**			**30**	**18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
Syllabus effective from 2010-2011

ENGLISH SYLLABUS FOR SEM. 1 & 2 of JNTU-K

Introduction

The major challenge of a language teaching in a technical institution is to prepare the student for employability through imparting language skills to develop communicative competence. The proficiency in English language is closely linked to 'good communication skills' more so in the recent times when employability is at stake for want of communication skills on the part of the students. Since skills and personal attributes are revealed through communication, the responsibility of grooming students in life skills is also emphasized as part of language teaching and learning.

The core key skills needed are:

- Communication
- Team Work
- Problem Solving
- Learning Skills

The personal attributes to be groomed are:

- Adaptability
- Commitment
- Enthusiasm
- Stress Management
- Integrity
- Sense of Humour
- Self-Motivation
- Reliability
- Self-esteem
- Personal Presentation

Since the inception of the Board of Studies for English, effort to design a Course Structure that would cater to the needs of a wide range of learner groups has been made. It was felt by the Board that the Course Structure has to take into consideration the above criteria and therefore the objectives of the Language course ought to be much focused.

Objectives

1: To improve the language proficiency of technical under graduates in English with emphasis on LSRW skills.

1.1: To provide learning environment to practice *listening*, *speaking*, *reading*, and *writing* skills within and beyond the classroom environment.

1.2: To assist the students to carry on the tasks and activities through guided instructions and materials.

2: To effectively integrate English language learning with employability skills and training.

2.1: To design the main course material and exercises with authentic materials drawn from everyday use to cater to everyday needs.

The material may be culled from newspaper articles, advertisements, promotional material etc.

2.2: To provide hands-on experience through case-studies, mini-projects, group & individual presentations.

Each chapter will be structured with a short passage or collage of passages for reading. All further exercises and activities will draw upon the broad subject of the passage(s), and use f**unctional and situational approach**

Chapter / ***Grammar & vocabulary***	***Reading & comprehension***	***Listening & speaking***	***Core skills and personal attributes developed through the exercises***	***Objectives achieved through the exercises***	***Plan of evaluation***	
	Reading comprehension based on the passage(s): multiple-choice questions asking students to derive sense of a word from the context provided by a sentence, short questions asking students to sum up the key points of a passage, encouraging students to address not only explicit statement but also implied meaning.	Dialogues from situations related to what ***Writing and analysis*** has been encountered in the reading passages.; the dialogues may now be Instructions on how to lay out a piece of used in a role-play, and in groups, writing, and exercises where students may analyze them for meaning are asked to generate their own write-and implications, and ultimately engage in ups dialogues of their own making.			A three-tier system, allowing the student to work through self-assessment, assessment by peers, and finally, assessment by the teacher.	
Chapter – 1 .Read & Proceed The importance of the language used for communication: • Understanding the need for English in the wider world, and the opportunities afforded by a strong command of the language • Assessing one's level within the language, and understanding the ways in which grasp of the language can be bettered • Understanding the basic structure of the sentence. **English: subject – verb – object** - ***Functional grammar exercise:*** Students may discuss in groups or pairs when, why and where English is used. What, for example, if they have to face a job interview? Or make an official presentation in a State that does not use Telugu? Or even find their way in an unfamiliar city? **Possible areas of focus and evaluation:** • Making sentences from given keywords • Correcting the order of words to make sentences, noting how change in word order can affect meaning.	Short extracts from: 1.An interview with Arundhati Roy 2.Jawaharlal Nehru's 'Tryst with Destiny' speech 3.Albert Einstein's essay 'The World As I See It'	Sentences Understanding and using the basic structure of the sentence in English (subject – verb – object); creating sentences; understanding the different kinds of sentences (whether a statement, or a question, or an exclamation, and so on)	**Small conversations between :** 1.A student and a hostel warden 2.An interviewer and an interviewee 3.Two friends together preparing for an oral examination at college	Communication teamwork, problem solving, learning skills	Enhanced learner-participation, development of linguistic proficiency	[Both Teacher's Manual and Sample Test Questions will be provided]

Chapter 2. Travel Nouns, pronouns, and adjectives: • Understanding the kinds and uses of nouns • Understanding the use of pronouns to replace nouns • Understanding the ways in which nouns are qualified through adjectives • Understanding the kinds of adjectives, their degrees and their uses ***Functional grammar exercise:*** Students may be asked, in pairs, to plan a trip to a place of mutual interest. Each pair would then be encouraged to explain how and why they arrived at this choice. What words are used to identify – and distinguish – the proposed destination? What naming words are used? How those words are then qualified? How do the nouns (the naming words) and adjectives (the qualifiers) help to create a character and atmosphere for the place or site to be visited? Is it possible to build anticipation through such evocation? ***Potential areas of focus and evaluation:*** • Changing nouns to the related adjectives • Changing adjectives to the related nouns • Replacing nouns with pronouns while retaining the meaning of the sentence	Reading and analysis of short extracts from two or more of the following: 1.Vikram Seth, *From Heaven Lake* 2.Ruskin Bond, *Landor Days* 3.Rabindranath Tagore, *The Europe Traveller's Diary* 4.Pankaj Mishra, *Butter Chicken in Ludhiana*	**Paragraphs** Understanding the structure of a paragraph; retaining the thread of an argument; introducing the subject of the paragraph in the initial sentence; developing the argument in the next few sentences; drawing to a conclusion by reinforcing what has already been stated, but without introducing any new ideas towards the end; being brief and concise, but carrying all the information that needs to be conveyed	**Snippets of exchanges between:** 1.A tour guide and a tourist 2.A local inhabitant of a city and a visitor 3.A photographer and her friend, with the photographer telling about the places of interest she has been to in her recent travels	Communication, adaptability, sense of humour, reliability,	Functional approach to finding solutions, enhanced learner-participation, development of linguistic proficiency	[Both Teacher's Manual and Sample Test Questions will be provided]

Chapter 3. Gender Verbs and adverbs: • Understanding the placement of a verb within a sentence • Understanding tenses • Understanding the use of adverbs to describe verbs *Functional grammar exercise:* Students may be asked to consider recent news headlines for remarkable stories involving women. How are either the events or the women remarkable? What have these women done, or what do they do? What words of action are used to talk about the accomplishments of the women? How are actions of the past differentiated from actions of the present and actions yet to be performed? How (using what adverbs) are those actions qualified? ***Potential areas of focus and evaluation:*** • Changing verbs to the related adverbs • Changing adverbs to the related verbs •Using verbs in their correct tenses, deriving the sense from the rest of the sentence	Reading and analysis of short extracts from four newspaper/journal pieces: 1. *The Telegraph* report on the 20-year old Burdwan girl who walked out of her marriage in revolt of her in-laws' demands for dowry 2. A perspective on astronaut Kalpana Chawla's achievement 3.The inspirational story of a young woman who survived child-marriage 4.Sudha Murthy's write on what it is possible for women to achieve	Essays and arguments Understanding that an essay or argument is a descriptive or persuasive piece of writing that needs to be organized as a succession of paragraphs; introducing the chief concerns in the first paragraph, and providing a layout of how the argument is going to be structured; developing the main thrust of the argument in the succeeding paragraphs; making smooth transitions between ideas and paragraphs(using appropriate connecting words or phrases); winding to a conclusion by drawing the various strings of the argument together	**Short exchanges between:** 1. Two friends, on an issue of contemporary interest 2. A reporter and a talk-show guest 3. A teacher and a student in school	Communication, teamwork, commitment, integrity, self-motivation, self-esteem	Enhanced learner-participation, development of linguistic proficiency, development of critical thinking	[Both Teacher's Manual and Sample Test Questions will be provided]

Chapter 4. Disaster Management Articles and punctuation: • Understanding the uses of 'a', 'an', and 'the' • Understanding the uses of words/phrases expressing quantity, like 'some', 'a bit of', 'more', etc. • Understanding and using correct punctuation to convey meaning ***Functional grammar exercise:*** Students may be asked to imagine that in the aftermath of a natural disaster, they are part of a relief team effort. When asked to effectively identify the needs of the situation, how do they plan to go about providing necessary aid? Is *an* ambulance to be arranged for? Or *a* medical tent set up? Are *adequate* first-aid supplies available? Do *more* rations need to be fetched? Could there be a tie-up with *an* overseas relief organization?	Reading and analysis of a short piece on the tsunami	Official letters and emails Effectively using the format of official communication: providing one's own address and contact details, documenting the date and place from which the communication is sent, the salutation used for the addressee, the main body of the letter or email (keeping it comprehensive but to the point), and signing off	Dialogues between: 1.a social worker and an earthquake victim 2.two doctors working in an area afflicted by natural disaster 3.two school students campaigning to raise relief money	Communication, teamwork, problem solving, adaptability, stress management, reliability, integrity	Enhanced learner-participation, development of linguistic proficiency, functional approach to problem solving, enabling group work	[Both Teacher's Manual and Sample Test Questions will be provided]
Chapter 5 –Health Prepositions, conjunctions and exclamations: • Understanding the use of prepositions – words that connect verbs with their objects • Understanding that certain verbs use certain prepositions • Understanding the uses of common prepositions: to, for, at, by, of, and so on • Understanding the uses of conjunctio and exclamations ***Functional grammar exercise:*** Students may be asked to propose ways which healthier living might be attained eating better *and* exercising, drinking plenty *of* water, partaking fre vegetables *from* the Market, and so on. Possible exercises may be framed around: • Filling in blanks within sentences • Distinguishing between different meanings possible through the use of different prepositions with the same verbs	Reading and analysis of three different kinds of writing, and comparisons between them: 1. A Government of India report on the success of nationwide campaigns for polio vaccination 2. A vegetarian's perspective on what makes for healthy living 3. An athlete's say on the benefits of lifelong exercise	**Reports** Learning the difference between an essay, for example, and a report; learning to identify the key points of an event or incident, and documenting them briefly but in a manner that conveys both the temper and the unfolding of the event; understanding what is meant by a 'target readership', and learning to tailor the piece to the needs of that readership	**Brief exchanges between:** 1. A father and his son/daughter, as he explains the importance of staying fit 2. A friends discussing the ideal diet 3. A campus counsellor and a student	Personal presentation, stress-management, commitment, enthusiasm,, self-motivation	Development of linguistic proficiency, functional approach to problem solving	[Both Teacher's Manual and Sample Test Questions will be provided]

Chapter 6 Sports : Revision of all elements of grammar handled thus far, through evocative descriptions of State or national or international level sports stories, and discussion of them. ***Functional grammar exercise:*** Students may, in pairs, be asked to present an account of a memorable sports meet or game. The use of nouns pronouns, and adjectives should help to clarify exactly what event is being talked about. Judicious use of adjective will help provide the context: how important the game or match was, where it was held, and so on. In a brief account of the game, verbs and adverbs will be necessary to report exactly what happened. If the account has to be detailed and lively, students will be obliged to use the correct forms and tenses. Of course, throughout, not only will the right inflections and articles be necessary, so too will the precise use of prepositions.	Reading and analysis of two of four short pieces in depiction of: 1. Opportunities for men and women in sports 2. A decisive moment in a game 3. Expectation and failure 4. The attitude of sportsmanship	Presentations Learning to identify the key elements of any issue and putting them down as succinct points; structuring the points so that they may be elaborated on according to necessity; understanding the progression of points so that no important element is missed out, but also, repetitions are avoided	Small conversations between: 1. A fitness instructor and a trainee 2. Two friends discussing a possible career in sports 3. Two friends discussing their favorite game	Teamwork, integrity, self-motivation, self-esteem, commitment	Development of linguistic proficiency, functional approach to problem solving	[Both Teacher's Manual and Sample Test Questions will be provided]

Test Book: *Step by Step :; Learning Language and Life Skills by* Pearson Longman; Pearson Publishers
Lab Manual: Maruthi Publications

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

MATHEMATICS-I *(Common to All Branches)*

Syllabus effective from 2010-2011

UNIT – I

Differential equations of first order and first degree – exact, linear and Bernoulli. Applications to Newton's Law of cooling, Law of natural growth and decay, orthogonal trajectories.

UNIT – II

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)

UNIT-III

Generalized Mean Value theorem (without proof) Functions of several variables – Functional dependence- Jacobian- Maxima and Minima of functions of two variables with constraints and without constraints.

UNIT-IV

Curve tracing – Cartesian - Polar and Parametric curves.

UNIT – V

Applications of Integration to Lengths, Volumes and Surface areas of revolution in Cartesian and Polar Coordinates.

UNIT – VI

Multiple integrals - double and triple integrals – change of variables – Change of order of Integration.

UNIT – VII

Vector Differentiation: Gradient- Divergence- Curl and their related properties of sums-products- Laplacian and second order operators.

UNIT-VIII

Vector Integration - Line integral – work done – Potential function – area- surface and volume integrals Vector integral theorems: Greens, Stokes and Gauss Divergence Theorems (Without proof) and related problems.

Text Books: 'A Text Book of Engineering Mathematics – I' by U. M. Swamy, P. Vijaya Lakshmi, Dr. M. P.K.Kishore and Dr. K.L. Sai Prasad – Excel Books, New Delhi

References:

1. Engineering Mathematics, Vol- 1, Dr. D. S.C. Prism Publishers

2. Engineering Mathematics, B. V. Ramana , Tata Mc Graw Hill

3. "Advanced Engineering Mathematics", Erwin Kreszig, 8 Ed. Wiley Student Edition

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING PHYSICS -1 *(Common to all branches)*
Syllabus effective from 2010-2011

UNIT-1

INTERFERENCE: Superposition of waves - Young's double slit experiment - Coherence - Interference in thin films by reflection -Newton's rings.

UNIT-II

DIFFRACTION: Fresnel and Fraunhofer diffractions - Fraunhofer diffraction at a single slit - Double slit - Diffraction grating - Grating spectrum - Resolving power of a grating - Rayleigh's criterion for resolving power.

UNIT-III

POLARIZATION: Types of Polarization - Double refraction - Nicol prism - Quarter wave plate and Half wave plate..

UNIT-IV

CRYSTAL STRUCTURE: Introduction - Space lattice - Basis - Unit cell - Lattice parameters - Bravais lattices - Crystal systems - Structure and packing fractions of simple cubic, Body centered cubic, Face centered cubic crystals.

UNIT-V

X-RAY DIFFRACTION: Directions and planes in crystals - Miller indices - Separation between successive [h k 1] planes - Diffraction of X - rays by crystal planes - Bragg's law - Laue method -Powder method.

UNIT-VI

LASERS: Introduction - Characteristics of lasers - Spontaneous and Stimulated emission of radiation -Einstein's coefficients - Population inversion - Ruby laser - Helium -Neon laser - Semiconductor laser - Applications of lasers in industry, scientific and medical fields.

UNIT-VII

FIBER OPTICS: Introduction - Principle of optical fiber - Acceptance angle and acceptance cone -Numerical aperture - Types of optical fibers and refractive index profiles - Attenuation in optical fibers -Application of optical fibers.

UNIT-VIII

NON-DESTRUCTIVE TESTING USING ULTRASONICS: Ultrasonic Testing - Basic Principle -Transducer - Couplant and Inspection Standards - Inspection Methods - Pulse Echo Testing Technique -Flaw Detector - Different Types of Scans - Applications.

Text Books :

1.Perspective of Engineering Physics by Dr.M.Sri Rama Rao (Retd Prof. in Physics, Andhra University, Visakhapatnam), Dr.N.Chaudhary and D.Prasad, Pub: Acme Learning.

Reference books:

1. Engineering Physics by S. Mani Naidu (Pearson publishers)
2. Engineering Physics by Sanjay D Jain and Girish G Sahasrabudhe(University press)
3. Engineering Physics by alik and A K Singh(Tata Mc Graw-Hill Publishing company Limited)

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING CHEMISTRY – I (*Common to all branches)*
Syllabus effective from 2010- 2011

CONCEPTS IN CHEMISTRY –ENGINEERING APPLICATIONS

UNIT-I

1. JOULE THOMSON EFFECT

Definitions of Enthalpy, Free Energy, Entropy, Principle and explanation of Joule Thomson Effect, application to Air Conditioning , Refrigeration (WORKING PRINCIPLE AND FLOW DAIGRAMS)

2. OSMOSIS &REVERSE OSMOSIS

Principles of Osmosis& Reverse Osmosis, applicaton to Desalination process-Types of Membranes used in desalination process-Limitations

3. LECHATELIERS PRINCIPLE ---

Definition of Chemical Equilibrium, Factors influence the Chemical Equilibrium, Statement and explanation of Lechateliers principle- Industrial applications for the production of Sulphuric Acid and Ammonia

4. SOLUBILITY PRODUCT& COMMON ION EFFECT--

Definition of Solubility & Ionic products, Industrial applications

UNIT-II

1.CATALYSIS

Explanation of Catalysis, Criteria of Catalysts, Few Industrial Catalysts

2. COLLOIDS

Explanation of Colloids- Properties of Colloids, Industrial applications of Colloids

3.FERMENTATION

Explanation of Fermentation with examples-Industrial applications

4.VISCOSITY:

Definition of Viscosity -Factors influence the Viscosity- Kinematic Viscosity-Determination of Molecular Weight of any one compound-Applications to fluids in motion –Type of flow.

UNIT-III

1.FLUORESENCE&PHOSPHORESENCE--- LUMINISCENT COMPOUNDS

Explanation of Fluorescence &Phosphorescence JOB s Diagram, Industrial applications of Chemiluminiscent compounds

2. PHOTO & LIGHT RESPONSIVE COMPOUNDS—SENSORS,BIOSENSORS

Explanation of Sensors & Biosensors-Principle –Few Applications

3. IONSELECTIVE ELECTRODES –

Principle- Chemistry &working of Electrode-applications to determination of Fluoride,Chloride and Nitrate

4. NUCLEAR MAGNETIC RESONANCE(NMR) : Principle –Few Electronic applications

UNIT-IV

1. SUPERCONDUCTIVTY – Definition-Preparation –Properties –Engineering Applications
2. SEMICONDUCTORS - Definition –Types of semiconductors (Stiochiometric,Non stichometric ,Organic, Controlled Valency Semiconductors, Doping)-applications
3. STORAGE DEVICES - Materials used and working of Floppy ,CD,Pendrive etc.
4. LIQUID CRYSTALS - Definition –Types - applications in LCD and Engineering Applications

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UNIT – V

THERMAL ENERGY- introduction to solid fuels – definition – calorific value (LCV, HCV) bomb calorimeter, pulverized coal – carbonization – analysis of coal (proximate and ultimate analysis) – working of thermal power station.

UNIT - VI

Chemical sources of energy – single electrode potential – Nernest Equation- reference electrodes – concentration cells-primary and secondary cells – fuel cells.

UNIT-VII

NUCLEAR ENERGY: Introduction to nuclear fuels – binding energy – nuclear fission and fusion reactions – nuclear reactions – disposal of nuclear wastes.

UNIT-VIII

SOLAR CELLS- introduction – harnessing solar energy – solar heaters – photo voltaic cells – solar reflection – green house concepts.

*Teachers Are Requested To Provide Information About National And International Status Of Conventional And Non Conventional Sources To The Students

Text Book :

A Text Book Of En Gineering Chemistry By N.Krishan Murty Anuradha , Maruthi Publications

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

C- Programming (Common to All Branches)

Syllabus effective from 2010- 2011

UNIT I:

INTRODUCTION: Computer systems, Hardware & software concepts.

PROBLEM SOLVING: Algorithm / pseudo code, flowchart, program development steps, Computer Languages: machine, symbolic, and high-level languages, Creating and running programs: Writing, editing, compiling, linking, and executing.

BASICS OF C: Structure of a C program, identifiers, basic data types and sizes. Constants, variables, arithmetic, relational and logical operators, increment and decrement operators, conditional operator, assignment operators, expressions, type conversions, conditional expressions, precedence and order of evaluation, Sample programs.

UNIT II:

BIT-WISE OPERATORS: logical, shift, rotation, masks.

SELECTION – MAKING DECISIONS: Two-way selection: if- else, null else, nested if, examples, Multi-way selection: switch, else-if, examples.

UNIT III:

STRINGS: concepts, c strings.

ITERATIVE: Loops - while, do-while and for statements, break, continue, initialization and updating, event and counter controlled loops, Looping applications: Summation, powers, smallest and largest.

UNIT IV:

ARRAYS: Arrays - concepts, declaration, definition, accessing elements, storing elements, Strings and string manipulations, 1-D arrays, 2-D arrays and character arrays, string manipulations, Multidimensional arrays , Array applications: Matrix Operations, checking the symmetricity of a Matrix,

UNIT V:

FUNCTIONS-MODULAR PROGRAMMING: Functions, basics, parameter passing, storage classes- extern, auto, register, static, scope rules, block structure, user defined functions, standard library functions, recursive functions, Recursive solutions for Fibonacci series, Towers of Hanoi, header files, C pre-processor, example c programs. Passing 1-D arrays, 2-D arrays to functions.

UNIT VI:

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

UNIT VII:

ENUMERATED, STRUCTURE AND UNION TYPES: Derived types- structures- declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, typedef, bit-fields, program applications.

UNIT VIII:

FILE HANDLING: Input and output – concept of a file, text files and binary files, Formatted I/o, file I/o operations, example programs.

Text Books : ‘ The C – Programming Language’ B.W. Kernighan, Dennis M. Ritchie, PHI

Reference :

1. C Programming : A Problem - Solving Approach, Forouzan, E. V. Prasad, Giliberg, Cengage, 2010.

2. Programming in C, Stephen G. Kochan, 3/e Pearson, 2007

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

MATHEMATICAL METHODS (*Common to ALL branches)*
Syllabus effective from 2010-2011

UNIT – I

Linear systems of equations: Rank-Echelon form, Normal form – Solution of Linear Systems – Direct Methods- Gauss Elimination - Gauss Jordon and Gauss Seidal Methods.

UNIT – II

Eigen values - Eigen vectors – Properties – Cayley-Hamilton Theorem - Inverse and powers of a matrix by using Cayley-Hamilton theorem.

UNIT-III

Quadratic forms- Reduction of quadratic form to canonical form – Rank - Positive, negative definite - semi definite - index – signature.

UNIT – IV

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

UNIT-V

Interpolation: Introduction- Errors in Polynomial Interpolation – Finite differences- Forward Differences- Backward differences –Central differences – Symbolic relations and separation of symbols-Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unevenly spaced points - Lagrange's Interpolation formula.

UNIT – VI

Numerical Differentiation and Integration – Differentiation using finite differences - Trapezoidal rule – Simpson's 1/3 Rule –Simpson's 3/8 Rule.

UNIT – VII

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 Methods- Milne's Method.

UNIT – VIII

Curve fitting: Fitting a straight line –Second degree curve-exponential curve-power curve by method of least squares.

Text Book : Ravindranath, V. and Vijayalaxmi, A., A Text Book on Mathematical Methods, Himalaya Publishing House, Bombay.

Reference Books :

1. Rukmangadachari, E. Mathematical Methods, Pearson Education, Delhi.
2. Kreszig, Erwin "Advanced Engineering Mathematics", 8 Ed. Wiley Student Edition.
3. Peter O' Neil, "Engineering Mathematics", Cengage Learning. Gordon, "Engineering Mathematics", Pearson Education

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING PHYSICS &CHEMISTRY LABORATORY-1 (*Common to all branches)*

Syllabus effective from 2010- 2011

PHYSICS-I

A. Mechanics

1. Determine the Rigidity Modulus of the material of the wire using Torsional Pendulum.
2. Determine the Frequency of vibration in Transverse and Longitudinal Mode using Melde's Apparatus.
3. Verify the Laws Transverse vibrations in stretched strings using Sonometer.
4. Determine the Velocity of Sound by Volume Resonator method.
5. Determine the Acceleration due to Gravity and Radius of Gyration using Compound Pendulum.

B. Optics:

6. Determine the Wavelength of a source by Normal Incidence method using Diffraction Grating.
7. Determine the Radius Curvature of a convex lens by forming Newton's Rings.
8. Determine the Refractive Index of the material of Prism (Minimum Deviation method) using Spectrometer.
9. Determine the Thickness of the Spacer used to form Parallel fringes due to Wedge shaped film.
10. Determination of Single slit diffraction using Lasers.

Manual/Record Books:

1. Manual cum Record for Engineering Phaysics Lab-1, by Prof.Sri M. Rama Rao, Acme Learning.

2. Lab manual of Engineering Physics by Dr. Y.Aparna and Dr. K.Venkateswara Rao (VGS Books links, Vijayawada)

CHEMISTRY LAB - 1

LIST OF EXPERIMENTS

1. Introduction to Chemistry Lab (the teachers are expected to teach fundamentals like Primary, Secondary Standard Solutions , Normality, Molarity, Molality etc and laboratory ware used, error ,accuracy, precision, Theory of indicators, use of volumetric titrations
2. **Introduction to Volumetric Analysis:**

The Teacher has to perform four types of volumetric titrations and will explain about the working of Indicators .(The Teacher has to call the students at random to perform the titrations)

2. ANALYSIS OF WATER

Estimation of :

a.**Calcium,Magnesium, ,Iron (111),Zinc (SEPERATELY)**

b.TOTAL HARDNESS BY EDTA METHOD

c..TURBIDITY

d.CONDUCTIVITY

e pH

f.TOTAL DISSOLVED SALTS

g.FLORIDES,CHLORIDES AND NITRATES (USING ION ANALYSER OR BY COLORIMETER)

h. DISSOLVED OXYGEN

i.BACTERIAL COUNT

The student has to get his water sample and the teacher has to explain the analysis and the results are to be compared with the INDIAN STANDRDS.

- All the teachers are requested to give top priority to water analysis as it is very useful for the students and society.complete water analysis may take couple of hours more but this has a unique influence on the system.

3. CONSTRUCTION OF GALVANIC CELL

Based on the position of the metals in the electrochemical series a model Electrochemical Cell is constructed and the values are determined and effect of metal ion concentration, Temprature etc. on emf are calculated.

Lab Manual :

Engineering chemistry laboratory manual &record By srinivasulu .d parshva publications

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING WORKSHOP (Common to all Branches)
Syllabus effective from 2010- 2011

I B.Tech – I Sem.

Note: At least two exercises to be done from each trade.

Trade:

Carpentry	1. T-Lap Joint
	2. Cross Lap Joint
	3. Dovetail Joint
	4. Mortise and Tennon Joint
Fitting	1. Vee Fit
	2. Square Fit
	3. Half Round Fit
	4. Dovetail Fit
Black Smithy	1. Round rod to Square
	2. S-Hook
	3. Round Rod to Flat Ring
	4. Round Rod to Square headed bolt
House Wiring	1. Parallel / Series Connection of three bulbs
	2. Stair Case wiring
	3. Florescent Lamp Fitting
	4. Measurement of Earth Resistance
Tin Smithy	1. Taper Tray
	2. Square Box without lid
	3. Open Scoop
	4. Funnel

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

C PROGRAMMING LAB (Common to all Branches)

Syllabus effective from 2010 -2011

Objectives:

- To learn/strengthen a programming language like C, To learn problem solving techniques

Recommended Systems/Software Requirements:

- Intel based desktop PC, ANSI C Compiler with Supporting Editors, IDE's such as Turbo C, Bloodshed C,
- Linux with gcc compiler

Exercise l

Solving problems such as temperature conversion, student grading, income tax calculation, etc., which expose students to use basic C operators

Exercise 2

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

Exercise 3

a) Write a C program to find the sum of individual digits of a positive integer.

b) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.

c) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

d) Write a program which checks a given integer is Fibonacci number or not.

Exercise 4

a) Write a C program to calculate the following Sum:

$$Sum=1-x^2/2! +x^4/4!-x^6/6!+x^8/8!-x^{10}/10!$$

b) Write a C program to find the roots of a quadratic equation.

Exercise 5

a) The total distance travelled by vehicle in't' seconds is given by distance = $ut+1/2at^2$ where 'u' and 'a' are the initial velocity (m/sec.) and acceleration (m/sec^2). Write C program to find the distance travelled at regular intervals of time given the values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of 'u' and 'a'.

b) Write a C program, which takes two integer operands and one operator form the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)

Exercise 6

a) Simple programming examples to manipulate strings.

b) Verifying a string for its palindrome property

Exercise 7

Write a C program that uses functions to perform the following operations:

i. To insert a sub-string in to given main string from a given position.
ii. To delete n Characters from a given position in a given string.
iii. To replace a character of string either from beginning or ending or at a specified location

Exercise 8

Write a C program that uses functions to perform the following operations using Structure:

i) Reading a complex number ii) Writing a complex number

iii) Addition of two complex numbers iv) Multiplication of two complex numbers

Exercise 9

a) Addition of Two Matrices

b) Calculating transpose of a matrix in-place manner.

c) Matrix multiplication by checking compatibility

Exercise 10

a) Write C programs that use both recursive and non-recursive functions for the following

i) To find the factorial of a given integer.
ii) To find the GCD (greatest common divisor) of two given integers.
iii) To solve Towers of Hanoi problem.

Exercise 11
a) Write a C functions to find both the largest and smallest number of an array of integers.

b) Write a C function that uses functions to perform the following:

i) that displays the position/ index in the string S where the string T begins, or –1 if S doesn't contain T.

ii) to count the lines, words and characters in a given text.

Exercise 12

a) Write a C function to generate Pascal's triangle.
b) Write a C function to construct a pyramid of numbers.
Exercise 13

Write a C function to read in two numbers, x and n, and then compute the sum of this geometric progression:

$1+x+x^2+x^3+\ldots\ldots\ldots\ldots+x^n$

Write a C function to read in two numbers, x and n(no. of terms), and then compute sin(x) and cos(x).

Exercise 14

a. Pointer based function to exchange value of two integers using passing by address.
b. Program which explains the use of dynamic arrays.
c. Program to enlighten dangling memory problem (Creating a 2-D array dynamically using pointer to pointers approach.

Exercise 15

Examples which explores the use of structures, union and other user defined variables

Exercise 16

a) Write a C program which copies one file to another.
b) Write a C program to reverse the first n characters in a file. (Note: The file name and n are specified on the command line)

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

I Year B.Tech Computer Science Engineering – I Sem
ENGLISH – COMMUNICATION SKILLS LAB – I

UNIT-1

Section – A Hello, I am

Section – B practicing Sounds

UNIT-2

Section – A I Would Love to ....but

Section – B practicing Sounds

UNIT-3

Section – A with your permission I would to .....

Section – B practicing Sounds

UNIT-4

Section – A Why don't we .....

Section – B Practicing Sounds

UNIT-5

Section – A Could you Please.....

Practicing Sounds

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

MATHEMATICS-II *(Common to All branches)*
Syllabus effective from 2010-2011

UNIT – I

Laplace transforms of standard functions –Shifting Theorems, Transforms of derivatives and integrals – Unit step function –Dirac's delta function.

UNIT – II

Inverse Laplace transforms– Convolution theorem - Application of Laplace transforms to ordinary differential equations Partial fractions.

UNIT – III

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

UNIT – IV

Fourier integral theorem (only statement) – Fourier sine and cosine integrals - Fourier transform – sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.

UNIT – V

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation and nonlinear (standard type) equations.

UNIT – VI

Method of Separation of Variables - Applications to wave equation, heat equation and Laplace Equation.

UNIT – VII

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

UNIT – VIII

Gamma and Beta Functions – Properties – Evaluation of improper integrals.

TEXT BOOK:

1. Swamy,U.M., Vijayalaxmi, P.,Ravikumar, R.V.G., and Phani Krishna Kishore., Mathematics II, Excel Books, New Delhi.

BOOKS:

1. B.V.Ramana, Engineering Mathematics, Tata Mc Graw Hill.
2. Iyengar,T.K.V, Krishna Gandhi, et.al Engineering Mathematics Vol-II, S.Chand Co. New Delhi.
3. Erwin Kreszig, "Advanced Engineering Mathematics", 8 Ed Wiley Student Edition.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING PHYSICS - II (*Common to all branches)*
Syllabus effective from 2010- 2011

UNIT-I

QUANTUM MECHANICS & QUANTUM COMPUTING: Introduction - Schrodinger Time Independent and Time Dependent wave equations - Particle in a box - Operator version -Suitability of Quantum system for Information Processing - Classical Bits and Qu-Bits - Bloch's Sphere - Quantum Gates - Multiple Qu-Bits - Advantages of Quantum Computing over classical Computation.

UNIT-II

ELECTRON THEORY OF METALS: Classical free electron theory - Mean free path - Relaxation time and drift velocity - Quantum free electron theory - Fermi - Dirac (analytical) and its dependence on temperature - Fermi energy - Electron scattering and resistance.

UNIT-HI

BAND THEORY OF SOLIDS: Bloch theorem (qualitative) - Kronig - Penney model - Origin of energy band formation in solids - Classification of materials into conductors, semi- conductors & insulators -Concept of effective mass of an electron.

UNIT-IV

MAGNETIC PROPERTIES: Permeability - Magnetization - Orgin of magnetic moment - Classification of Magnetic materials - Dia, para and ferro- magnetism -Domain and Weiss field theory - Hysteresis Curve - Soft and Hard magnetic materials.

UNIT-V

SUPERCONDUCTIVITY: General properties - Meissner effect - Penetration depth - Type I and type II superconductors - Flux quantization - DC and AC Josephson effect - BCS Theory - Applications of superconductors.

UNIT-VI

DIELECTRIC PROPERTIES: Introduction - Dielectric constant - Electronic, ionic and orientational polarizations - Internal fields in solids - Clausius-Mossotti equation - Dielectrics in alternating fields -frequency dependence of the polarizability - Ferro and Piezo electricity.

UNIT-VII

SEMICONDUCTORS: Introduction - Intrinsic semiconductor and carrier concentration - Equation for conductivity - Extrinsic semiconductor and carrier concentration - Drift and diffusion - Einstein's equation - Hall effect - Direct & indirect band gap semiconductors.

UNIT-VIII

PHYSICS OF NANO MATERIALS: Introduction - Properties and prepation of Nano Materials -Surface occupancy - Reduction of Dimensionality - 4D -Force vector - Quantum wires - Quantum dots and Quantum wells - Density of states and Energy spectrum - Nanotubes - Applications of nanomaterials.

Text book: Perspective of Engineering Physics - II by M Sri Ramarao, Nityananda Choudary, Daruka Prasad, ACME Learning.

Refernce books: 1. Solid State Physics – by A J Dekker , Mcmilan India Ltd.
2. A Text Book of Engineering Physics , by Bhattacharya & Bhaskara , Oxford University Press
3. Engineering Physics by K Shiva Kumar, Prism Books Pvt. Ltd

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING CHEMISTRY – II (*Common to all branches)*
Syllabus effective from 2010- 2011

UNIT-I

POLYMERS: Introduction - Types of polymers – Classification - Methods of polymerisation – Stereo specific polymers - Ziegler Natta catalysis - Properties of polymers –Conducting Polymers- Engineering applications – Biodegradable polymers - Individual polymers(Preparation ,Properities,Uses of Poly Styrene, PVC, PTFE, Bakelite's, Cellulose derivatives, Poly Carbonates)

UNIT-II

PLASTICS – Types –Compounding of plastics- Moulding(Four types)- Fiber reinforced , Glass fibre reinforced plastics –Bullet Proof Plastics– Properties of plastics – Engineering applications

UNIT-III

RUBBERS & ELASTOMERS: Introduction – Preparation – Vulcanization – Properties - Engineering applications. Buna-S,Buna-N, - Poly Urethane - Engineering applications of Elastomers

UNIT-IV

NANO MATERIALS

Introduction to Nano materials-preparation of few Nano materials(Carbon Nano Tubes,Fullerenes etc)-Properities of Nano materials- Engineering applications.

UNIT-V

BUILDING MATERIALS(CEMENT,REFRACTORIES,CRAMICS):

CEMENT

Introduction, Manufacturing of Portland Cement(Dry &We Process)-Chemistry of Setting and Hardening of Cement-Effect of Carbon dioxide,Sulphur Dioxide ,Chloride on Cement concrete.

REFRACTORIES

Introduction-Classification –Properties-Applications

CERAMICS

Introduction-Classification – Glazed &Unglazed Ceramics -Properties-Engineering Applications.

UNIT-VI

FUEL TECHNOLOGY

Introduction to Liquid Fuels-Classification of Crude Oil-Fractional Distillation-Cracking (Thermal &Catalytic), Polymerization-Refining &Reforming –Working of Internal Combustion Engine, Heated Chambers-Knocking – AntiKnocking Agents-Octane &Cetane Number.

LUBRICANTS

Definition and Explanation of Lubrication-Mechanism of Lubrication –Types of Lubricants-Properties of Lubricants-Engineering applications

UNIT-VII

CORROSION – Mechanism- Factors influence the rate of corrosion - Types of Corrosion -Protection methods (Anodic & Cathodic protection), - Metallic Coatings - Paints, Varnishes, Enamels , Special paints.

UNIT-VIII

GREEN CHEMISTRY

Introduction-Concepts- Engineering Applications

Text Book : A Text book of engineering chemistry by Srinivasulu D. Parshva publications

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING DRAWING (Common to all Branches)

Syllabus effective from 2010- 2011

I B.Tech – II Semester

Unit-I

Polygons-Construction of Regular Polygons using given length of a side; Ellipse- Arcs of Circles and Oblong Methods; Scales-Vernier and Diagonal Scales.

Unit-II

Introduction to Orthographic Projections; Projections of Points; Projections of Straight Lines parallel to both planes; Projections of Straight Lines-Parallel to one and inclined to other plane.

Unit-III

Projections of Straight Lines inclined to both planes, determination of true lengths, angle of inclinations and traces.

Unit-IV

Projections of Planes; Regular Planes Perpendicular / Parallel to one Reference Plane and inclined to other Reference Plane; inclined to both the Reference Planes.

Unit-V

Projections of Solids-Prisms and Cylinders with the axis inclined to one Plane.

Unit-VI

Projections of Solids- Pyramids and Cones with the axis inclined to one plane.

Unit-VII

Conversion of Isometric Views to Orthographic Views.

Unit-VIII

Conversion of Orthographic Views to Isometric Projections and Views.

TEXT BOOK:

1. Engineering Drawing by N.D. Bhat, Chariot Publications

REFERENCE BOOKS:

1. Engineering Drawing by M.B. Shah and B.C. Rana, Pearson Publishers
2. Engineering Drawing by Dhananjay A. Jolhe, Tata McGraw Hill Publishers
3. Engineering Graphics for Degree by K.C. John, PHI Publishers

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENVIRONMENTAL STUDIES (Common to all Branches)

Syllabus effective from 2010 -2011

UNIT - I

Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Need for Public Awareness.

UNIT - II

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: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources. Case studies. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT - III

Ecosystems : Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - 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)

UNIT - IV

Biodiversity and its conservation : Introduction - Definition: genetic, species andecosystem 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-sports 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 - V

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 wastes. - Role of an individual in prevention of pollution. - Pollution case studies. - Disaster management: floods, earthquake, cyclone and landslides.

UNIT - VI

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 - VII

Human Population and the Environment: Population growth, variation among nations. Population explosion –Family Welfare Programme. -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. Page 37 of 79

UNIT - VIII

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. -Study of simple cosystemspond, river, hill slopes, etc.

Text Books :

1. An Introduction to Environmental Studies by B. Sudhakara Reddy, T. Sivaji Rao, U. Tataji & K. Purushottam Reddy, Maruti Publications.

Reference :

1. Text Book of Environmental Studies by Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. Environmental Studies by K.V.S.G. Murali Krishna, VGS Publishers, Vijayawada
3. Text Book of Environmental Sciences and Technology by M. Anji Reddy, BS Publications.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

MATHEMATICAL METHODS (*Common to ALL branches)*
Syllabus effective from 2010-2011

UNIT – I

Linear systems of equations: Rank-Echelon form, Normal form – Solution of Linear Systems – Direct Methods- Gauss Elimination - Gauss Jordon and Gauss Seidal Methods.

UNIT – II

Eigen values - Eigen vectors – Properties – Cayley-Hamilton Theorem - Inverse and powers of a matrix by using Cayley-Hamilton theorem.

UNIT-III

Quadratic forms- Reduction of quadratic form to canonical form – Rank - Positive, negative definite - semi definite - index – signature.

UNIT – IV

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

UNIT-V

Interpolation: Introduction- Errors in Polynomial Interpolation – Finite differences- Forward Differences- Backward differences –Central differences – Symbolic relations and separation of symbols-Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unevenly spaced points - Lagrange's Interpolation formula.

UNIT – VI

Numerical Differentiation and Integration – Differentiation using finite differences - Trapezoidal rule – Simpson's 1/3 Rule –Simpson's 3/8 Rule.

UNIT – VII

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 Methods- Milne's Method.

UNIT – VIII

Curve fitting: Fitting a straight line –Second degree curve-exponential curve-power curve by method of least squares.

Text Book : Ravindranath, V. and Vijayalaxmi, A., A Text Book on Mathematical Methods, Himalaya Publishing House, Bombay.

Reference Books :

1. Rukmangadachari, E. Mathematical Methods, Pearson Education, Delhi.
2. Kreszig, Erwin "Advanced Engineering Mathematics", 8 Ed. Wiley Student Edition.
3. Peter O' Neil, "Engineering Mathematics", Cengage Learning. Gordon, "Engineering Mathematics", Pearson Education

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING PHYSICS&CHEMISTRY LABORATORY- II

PHYSICS:

Electro-Magnetism and Electronics:

1.Determine the Planck's constant using Photo-Ceil.
2.Study the variation of Magnetic Field along the axis of a solenoid coil using Stewart - Gee's apparatus.
3.Draw the Frequency Response curves of L-C-R Series and Parallel Circuits.
4.Determine the Time Constant for a C-R Circuit.
5.Determine the Band Gap of a Semi conductor using a p-n junction diode.
6.Study of Characteristic curves (l/V) of a Zener diode to determine its Breakdown voltage.
7.Determine the Hall Coefficient of a Semiconductor.
8.Draw the characteristic curves and determine the Thermoelectric coefficient of a Thermistor
9.Study the Seebeck and Peltier - Thermoelectric Effects and to determine Coefficients and Thermo Electric Effect using Thermocouple.
10.Draw the Characteristic curves of a p-i-n and Avalanche Photo Diodes.
11.Determination of Numerical Aperture and Bending losses of an Optical Fiber.

Manual Cum Record Books:

1. Manual cum Record for Engineering Physisc Lab – II, by Prof.Sri.M. Rama Rao, Acme Learning...
2. Lab Manual – II, of Engineering Physics by Dr. Y. Aparna and Dr.K. Venkateswara Rao (VGS Books Links, Vijayawada)

CHEMISTRY LAB – II

1. **PRODUCTION OF BIODIESEL. INTRODUCTION TO BIO FUELS**

The teacher has to perform the transesterfication reaction of FATTY ACID and the Biodiesel thus produced can be used for analysis.(Please give priority to production of Biodiesel from waste cooking oil)

2. Estimation of properties of oil:
   a. Acid Number
   b. Viscosity
   c. Saponification value
   d. Aniline point
   e. Flash and Fire points
   f. Pour and Cloud point

3. **PREPARATION OF PHENOL –FORMALDEHYDE RESIN**

4. **SOIL ANALYSIS**:
   pH, Determination of Zinc, Iron, Copper.

5. **FOOD ANALYSIS:**
   Determination Saturated and Unsaturated Fatty Acids, pH,etc.

All the teachers are requested to focus on bio fuels ,soil analysis and food analysis as these are the need of 21 st century and these experiments are so desigened to encourage students to carry out lab to land process.

Lab Manual : Engineering chemistry laboratory manual &record By Srinivasulu . D. Parshva publications

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

I Year B.Tech Computer Science Engineering – II Sem
ENGLISH – COMMUNICATION SKILLS LAB – II

UNIT-6

Dialogues

UNIT-7

Interviews

UNIT-8

Effective Telephonic Interviews

UNIT-9

Group Discussions

UNIT-10

Debates

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IT WORKSHOP (Common to all Branches)
Syllabus effective from 2010- 2011

Objectives:

The IT Workshop for engineers is a 6 training lab course spread over 45 hours.

The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including (word processor, spread sheet, presentation sw) Word, spread sheet Excel, Power Point and Publisher.

PC Hardware Identification of basic peripherals, assembling a PC, installation of system software like MS Windows, Linux and the device drivers. Troubleshooting Hardware and software _ some tips and tricks .

Internet & World Wide Web: Different ways of hooking the PC on to the internet from home and workplace and effectively usage of the internet, web browsers, email, newsgroups and discussion forums .Awareness of cyber hygiene(protecting the personal computer from getting infected with the viruses), worms and other cyber attacks .

Productivity tools Crafting professional word documents; excel spread sheets, power point presentations and personal web sites using the Microsoft suite of office tools and LaTeX.

(Note: Student should be thoroughly exposed to minimum of 12 Tasks)

PC Hardware

Task 1: Identification of the peripherals of a computer.

To prepare a report containing the block diagram of the CPU along with the configuration of each peripheral and its functions.

Task 2(Optional) : A practice on disassemble the components of a PC and assembling them to working condition.

Task 3 : Installation of MS windows and LINUX on a PC.

Task 4 : Exposure to Basic commands and system administration in Linux including: Basic Linux commands in bash, Create hard and symbolic links.

Task 5 :

Hardware Troubleshooting (Demonstration):

Students have to be given a PC which does not boot due to improper assembly or defective peripherals. Identification of a problem and fixing it for getting to working condition.

Software Troubleshooting (Demonstration): Students have to be given a malfunctioning CPU due to system software problems. Identification of a problem and fixing it for getting to working condition.

Internet & World Wide Web

Task 6 : **Orientation & Connectivity Boot Camp and surfing the Web using Web Browsers :** Students should get connected to their Local Area Network and access the Internet. In the process they should configure the TCP/IP setting and demonstrate how to access the websites and email. Students customize their web browsers using bookmarks, search toolbars and pop up blockers.

Task 7: **Search Engines & Netiquette :** Students should know what search engines are and how to use the search engines.

A few topics would be given to the students for which they need to search on Google.

Task 8 : Cyber Hygiene (Demonstration) : Awareness of various threats on the internet. To install an anti virus software and to configure their personal firewall and windows update on their computers.

LaTeX and Word

Word Orientation : Importance of LaTeX and MS/ equivalent (FOSS) tool Word as word Processors.

Details of the four tasks and features that would be covered in each, Using LaTeX and word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word.

Task 9 : Using LaTeX and word to create project certificate. Features to be covered:-Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both LaTeX and Word.

Task 10: Creating project : Abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check , Track Changes, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes and Paragraphs.

Excel

Excel Orientation : The mentor needs to tell the importance of MS/ equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel –

Accessing, overview of toolbars, saving excel files, Using help and resources

Task 11 : Creating a Scheduler - Features to be covered:- Gridlines, Format Cells, Summation, auto fill, Formatting Text

LOOKUP/VLOOKUP

Task 12 : Performance Analysis - Features to be covered:- Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting

LaTeX and MS/equivalent (FOSS) tool Power Point

Task 13 : Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this week includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows, Hyperlinks, Inserting –Images, Clip Art, Tables and Charts in both LaTeX and Powerpoint.

Task 14 : Concentrating on the in and out of Microsoft power point and presentations in LaTeX. Helps them learn best practices in designing and preparing power point presentation. Topic covered during this week includes: - Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background, textures, Design Templates, Hidden slides.

REFERENCES :

1 Scott Mueller's Upgrading and Repairing PCs, 18/e, Scott. Mueller, QUE, Pearson,2008
2 The Complete Computer upgrade and repair book,3/e,Cheryl A Schmidt, Dreamtech

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2010-11

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

Kakinada 533 003

II B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

COURSE STRUCTURE AND SYLLABUS – 2010-11 BATCH

II Year

I SEMESTER		**P**	**C**	**II SEMESTER**		**P**	**C**
S.No.	**Subject**	**P**	**C**	**S.No.**	**Subject**	**P**	**C**
1	Managerial Economics and Financial Analysis	**4**+1*	**4**	1	Software Engineering	**4**+1*	**4**
2	Probability & Statistics	**4**+1*	**4**	2	Principles of Programming Languages	**4**+1*	**4**
3	Mathematical Foundations of Computer Science and Engineering	**4**+1*	**4**	3	Object Oriented Programming through Java	**4**+1*	**4**
4	Digital Logic Design	**4**+1*	**4**	4	Computer Organization	**4** +1*	**4**
5	Electronic Devices and Circuits	**4**+1*	**4**	5	Data Base Management Systems	**4**+1*	**4**
6	Data Structures	**4**+1*	**4**	6	Formal Languages and Automata Theory	**4**+1*	**4**
7	Electronic Devices and Circuits Lab	**3**	**2**	7	Object Oriented Programming Lab	**3**	**2**
8	Data Structures Lab	**3**	**2**	8	Data Base Management Systems Lab	**3**	**2**
9	English Communication Practice - I	**2**	**1**	9	English Communication Practice - 2	**2**	**1**
10	Professional Ethics and Morals – I	**2**		10	Professional Ethics and Morals – I	**2**	
Total Credits			**29**	**Total Credits**			**29**

***Tutorial**

2010-11

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – I Sem.

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Unit I

Introduction to Managerial Economics:

Introduction to Managerial Economics & Demand Analysis: Definition of Managerial Economics, Characteristics and Scope – Managerial Economics and its relation with other subjects- Basic economic tools in Managerial Economics **Demand Analysis:** Meaning- Demand distinctions- Demand determinants- Law of Demand and its exceptions.

Unit-II

Elasticity of Demand & Demand Forecasting: Definition -Types of Elasticity of demand - Measurement of price elasticity of demand: Total outlay method, Point method and Arc method- Significance of Elasticity of Demand.

Demand Forecasting: Meaning - Factors governing demand forecasting - Methods of demand forecasting (survey of buyers' Intentions, Delphi method, Collective opinion, Analysis of Time series and Trend projections, Economic Indicators, Controlled experiments and Judgmental approach) - Forecasting demand for new products- Criteria of a good forecasting method.

Unit-III

Theory of Production and Cost Analysis: Production Function- Isoquants and Isocosts, MRTS, Law of variable proportions- Law of returns to scale- Least Cost Combination of Inputs, Cobb-Douglas Production function - Economies of Scale.

Cost Analysis: Cost concepts, Opportunity cost, Fixed Vs Variable costs, Explicit costs Vs. Implicit costs, Out of pocket costs vs. Imputed costs.-Determination of Break-Even Point (simple problems) - Managerial Significance and limitations of BEP.

UNIT-IV

Introduction to Markets, Managerial Theories of the Firm & Pricing Policies: Market structures**:** Types of competition, Features of Perfect Competition, Monopoly and Monopolistic Competition. Price-Output Determination under Perfect Competition, Monopoly, Monopolistic Competition and Oligopoly Managerial theories of the firm - Marris and Williamson's models.

Pricing Policies: Methods of Pricing-Marginal Cost Pricing, Limit Pricing, Market Skimming Pricing, Penetration Pricing, Bundling Pricing, and Peak Load Pricing. Internet Pricing Models: Flat rate pricing, Usage sensitive pricing, Transaction based pricing, Priority pricing, charging on the basis of social cost, Precedence model, Smart market mechanism model.

Unit V

Types of Industrial Organization & Introduction to business cycles: Characteristic features of Industrial organization, Features and evaluation of Sole Proprietorship, Partnership, Joint Stock Company, State/Public Enterprises and their types.

Introduction to business cycles: Meaning-Phases of business cycles- Features of business cycles.

Unit VI

Introduction to Financial Accounting: Introduction to Double-entry system, Journal, Ledger, Trial Balance- Final Accounts (with simple adjustments)- Limitations of Financial Statements.

Unit VII

Interpretation and analysis of Financial Statement: Ratio Analysis – Liquidity ratios, Profitability ratios and solvency ratios – Preparation of changes in working capital statement and fund flow statement.

Unit VIII

Capital **and Capital Budgeting**: Meaning of capital budgeting, Need for capital budgeting – Capital budgeting decisions (Examples of capital budgeting) - Methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR), IRR and Net Present Value Method (simple problems)

Text Books:

1. **J.V.Prabhakar Rao**: Managerial Economics and Financial Analysis, Maruthi Publications, 2011

2. **N. Appa Rao. & P. Vijaya Kumar**: 'Managerial Economics and Financial Analysis', Cengage Publications, New Delhi, 2011

References:

1. A R Aryasri - Managerial Economics and Financial Analysis, TMH 2011
2. Suma damodaran- Managerial Economics, Oxford 2011
3. S.A. Siddiqui & A.S. Siddiqui, Mangerial Economice and Financial Analysis, New Age International Publishers, 2011.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – I Sem.

PROBABILITY AND STATISTICS

UNIT-I

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

UNIT-II

Random variables – Discrete and continuous distributions - Distribution function.

UNIT-III

Binomial, Poisson, normal distribution – related properties. Moment generating function, Moments of standard distributions – properties.

UNIT-IV

Population and samples. Sampling distribution of mean (with known and unknown variance), proportion, variances. - Sampling distribution of sums and differences. Point and interval estimators for means, variances, proportions.

UNIT-V

Statistical Hypothesis – Errors of Type I and Type II errors and calculation. One tail, two-tail tests. Testing hypothesis concerning means, proportions and their differences using Z-test.

UNIT-VI

Tests of hypothesis using Student's t-test, F-test and χ^2 test.. Test of independence of attributes - ANOVA for one-way and two-way classified data.

UNIT-VII

Statistical Quality Control methods – Methods for preparing control charts – Problems using x-bar, p, R charts and attribute charts – Simple Correlation and Regression.

UNIT-VIII

Queuing Theory: Pure Birth and Death Process M/M/1 Model and Simple Problems.

TEXT BOOK

1. Probability and Statistics for Engineers, Miller and John E. Freund, Prentice Hall of India.
2. Probability and Statistics, D. K. Murugeson & P. Guru Swamy, Anuradha Publishers.

REFERENCE

1. Probability, Statistics and Random processes. T. Veerrajan, Tata Mc.Graw Hill, India.
2. Probability, Statistics and Queuing theory applications for Computer Sciences 2 ed, Trivedi, John Wiley.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – I Sem.

MATHEMATICAL FOUNDATIONS FOR COMPUTER SCIENCE & ENGINEERING

UNIT I:Mathematical Logic :
Propositional Calculus: Statements and Notations, Connectives, Truth Tables, Tautologies, Equivalence of Formulas, Duality law, Tautological Implications, Normal Forms, Theory of Inference for Statement Calculus, **Consistency of Premises, Indirect Method of Proof.**
Predicate calculus: Predicative Logic, Statement Functions, Variables and Quantifiers, Free & Bound Variables, Inference theory for predicate calculus.

UNIT II :Number Theory & Induction:
Properties of integers, Division Theorem, The Greatest Common Divisor, Euclidean Algorithm, Least Common Multiple, Testing for Prime Numbers, The Fundamental Theorem of Arithmetic, Modular Arithmetic (Fermat's Theorem and Euler 's Theorem)
Mathematical Induction: Principle of Mathematical Induction,exercises

UNIT III:Set Theory:
Introduction, Operations on Binary Sets, Principle of Inclusion and Exclusion
Relations: Properties of Binary Relations, Relation Matrix and Digraph, Operations on Relations, Partition and Covering, Transitive Closure, Equivalence, Compatibility and Partial Ordering Relations, Hasse Diagrams.

Functions: Bijective Functions, Composition of Functions, Inverse Functions, Permutation Functions, Recursive Functions

UNIT IV:Graph Theory:
Basic Concepts of Graphs, Sub graphs, Matrix Representation of Graphs: Adjacency Matrices, Incidence Matrices, Isomorphic Graphs, Paths and Circuits, Eulerian and Hamiltonian Graphs, Multigraphs, (Problems and Theorems without proofs)

UNIT V:Graph Theory II:
Planar Graphs, Euler's Formula, Graph Colouring and Covering, Chromatic Number,(Problems and Theorems without proofs)
Trees, Directed trees, Binary Trees, Decision Trees,
Spanning Trees: Properties, Algorithms for Spanning trees and Minimum Spanning Tree.

UNIT VI: Algebraic Structures:
Lattice: Properties, Lattices as Algebraic Systems,
Algebraic Systems with one Binary Operation, Properties of Binary operations, Semi groups and Monoids: Homomorphism of Semi groups and Monoids, Groups: Abelian Group, Cosets, Subgroups (Definitions and Examples of all Structures)
Algebraic Systems with two Binary Operations: Rings

UNIT VII: Combinatorics:
Basic of Counting, Permutations, Derangements, Permutations with Repetition of Objects, Circular Permutations, Restricted Permutations, Combinations, Restricted Combinations, Pigeonhole Principle and its Application.

Binomial Theorem**,** Binomial and Multinomial Coefficients, Generating Functions of Permutations and Combinations, The Principles of Inclusion – Exclusion.

UNIT VIII: Recurrence Relation:
Generating Function of Sequences, Partial Fractions, Calculating Coefficient of Generating Functions
Recurrence Relations, Formulation as Recurrence Relations, Solving linear homogeneous recurrence Relations by substitution, generating functions and The Method of Characteristic Roots.
Solving Inhomogeneous Recurrence Relations

TEXT BOOKS :

1. Discrete Mathematical Structures with Applications to Computer Science, Tremblay, Manohar, TMH
2. Discrete Mathematics for Computer Scientists & Mathematicians, 2/e, Mott, Kandel, Baker, PHI

REFERENCE BOOKS:

1. Discrete Mathematics, S.Santha, Cengage
2. Discrete Mathematics with Applications, Thomas Koshy, Elsevier
3. Discrete Mathematics,2/e, JK Sharma ,Macmillan

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – I Sem.

DIGITAL LOGIC DESIGN

Unit I : Number Systems

Binary, Octal, Decimal, Hexadecimal Number Systems. Conversion of Numbers From One Radix To Another Radix , r's Complement and (r-1)'s Complement Subtraction of Unsigned Numbers, Problems, Signed Binary Numbers, Weighted and Non weighted codes

Unit II:Logic Gates And Boolean Algebra

Basic Gates NOT, AND, OR, Boolean Theorms,Complement And Dual of Logical Expressions, Universal Gates, Ex-Or and Ex-Nor Gates, SOP,POS, Minimizations of Logic Functions Using Boolean Theorems, Two level Realization of Logic Functions Using Universal Gates. Verilog programming for the minimized logic functions.

Unit III: Gate- Level Minimization

Karnaugh Map Method(K-Map): Minimization of Boolean Functions maximum upto Four Variables , POS And SOP, Simplifications With Don't Care Conditions Using K-Map.

Unit IV: Combinational Arithmetic Logic Circuits

Design of Half Adder, Full Adder, Half Subtractor , Full Subtractor, Ripple Adders and Subtractors, Ripple Adder/Subtractor Using Ones and Twos Complement Method. Serial Adder , Carry Look Ahead Adder.

Unit V: Combinational Logic Circuits

Design of Decoders, Encoders, Multiplexers, Demultiplexers, Higher Order Demultiplexers and Multiplexers, Realization of Boolean Functions Using Decoders and Multiplexers, Priority Encoder, Code Converters, Magnitude Comparator.

Unit VI: Introduction to Programmable Logic Devices (PLOs)

PLA, PAL, PROM. Realization of Switching Functions Using PROM, PAL and PLA. Comparison of PLA, PAL and PROM..

Unit VII: Introduction to Sequential Logic Circuits

Classification of Sequential Circuits, Basic Sequential Logic Circuits: Latch and Flip-Flop, RS- Latch Using NAND and NOR Gates, Truth Tables. RS,JK,T and D Flip Flops , Truth and Excitation Tables, Conversion of Flip Flops. Flip Flops With Asynchronous Inputs (Preset and Clear).

Unit VIII: Registers and Counters

Design of Registers, Buffer Register, Control Buffer Registers, Bidirectional Shift Registers, Universal Shift Register, Design of Ripple Counters, Synchronous Counters and Variable Modulus Counters, Ring Counter, Johnson Counter.

TEXT BOOKS :

1. Digital Design ,4/e, M.Morris Mano, Michael D Ciletti, PEA
2. Fundamentals of Logic Design, 5/e, Roth, Cengage

REFERENCE BOOKS

1. Switching and Finite Automata Theory,3/e,Kohavi, Jha, Cambridge.
2. Digital Logic Design, Leach, Malvino, Saha,TMH
3.Modern Digital Electronics, R.P. Jain, TMH

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – I Sem.

ELECTRONIC DEVICES AND CIRCUITS

Unit-I

Electron Ballistics and Applications: Force on Charged Particles in Electric field, Constant Electric Field, Potential, Relationship between Field Intensity and Potential, Two Dimensional Motion, Electrostatic Deflection in Cathode ray Tube, CRO, Force in Magnetic Field, Motion in Magnetic Field, Magnetic Deflection in CRT, Magnetic Focusing, Parallel Electric and Magnetic fields and Perpendicular Electric and Magnetic Fields.

Unit- II

Review of Semi Conductor Physics : Insulators, Semi conductors, and Metals classification using Energy Band Diagrams, Mobility and Conductivity, Electrons and holes in Intrinsic Semi conductors, Extrinsic Semi Conductor, (P and N Type semiconductor) Hall effect, Generation and Recombination of Charges, Diffusion, Continuity Equation, Injected Minority Carriers, Law of Junction, Fermi Dirac Function, Fermi level in Intrinsic and Extrinsic Semiconductor

Unit- III

Junction Diode Characteristics : Open circuited P N Junction, Forward and Reverse Bias, Current components in PN Diode, Diode Equation,Volt-Amper Characteristic, Temperature Dependence on V – I characteristic, Step Graded Junction, Diffusion Capacitance and Diode Resistance (Static and Dynamic), Energy Band Diagram of PN Diode,

Special Diodes: Avalanche and Zener Break Down, Zener Characterisitics, Tunnel Diode, Characteristics with the help of Energy Band Diagrams, Varactor Diode, LED, PIN Diode, Photo Diode

Unit IV

Rectifiers and Filters: Half wave rectifier, ripple factor, full wave rectifier(with and without transformer), Harmonic components in a rectifier circuit, Inductor filter, Capacitor filter, L- section filter, Π- section filter, Multiple L- section and Multiple Π section filter, and comparison of various filter circuits in terms of ripple factors, Simple circuit of a regulator using zener diode, Series and Shunt voltage regulators

Unit- V

Transistors :

Junction transistor, Transistor current components, Transistor as an amplifier, Characteristics of Transistor in Common Base and Common Emitter Configurations, Analytical expressions for Transistor Characteristics, Punch Through/ Reach Through, Photo Transistor, Typical transistor junction voltage values.

Unit VI

Field Effect Transistors:

JFET characteristics (Qualitative and Quantitative discussion), Small signal model of JFET, MOSFET characteristics (Enhancement and depletion mode), Symbols of MOSFET, Introduction to SCR and UJT and their characteristics,

UNIT-VII

Transistor Biasing and Thermal Stabilization : Transistor Biasing and Thermal Stabilization: Operating point, Basic Stability, Collector to Base Bias, Self Bias Amplifiers, Stabilization against variations in V_{BE},, and β for the self bias circuit, Stabilization factors, (S, $S^{'}$, $S^{''}$), Bias Compensation, Thermistor and Sensitor compensation, Compensation against variation in V_{BE}, I_{co},, Thermal runaway, Thermal stability

UNIT- VIII

Small signal low frequency Transistor models: Two port devices and the Hybrid model, Transistor Hybrid model, Determination of h-parameters from characteristics, Measurement of h-parameters, Conversion formulas for the parameters of three transistor configurations, Analysis of a Transistor Amplifier circuit using h- parameters, Comparison of Transistor Amplifier configurations

Text Books

1. Electronic Devices and Circuits – J. Millman, C.C. Halkias, Tata Mc-Graw Hill

Reference

1. Electronic Devices and Circuits – K Satya Prasad, VGS Book Links
2. Integrated Electronics – Jacob Millman, Chritos C. Halkies,, Tata Mc-Graw Hill, 2009
3. Electronic Devices and Circuits – Salivahanan, Kumar, Vallavaraj, TATA McGraw Hill, Second Edition
4. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, Pearson/Prentice Hall,9thEdition,2006
5. Electronic Devices and Circuits -BV Rao, KBR Murty, K Raja Rajeswari, PCR Pantulu, Pearson, 2nd edition

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – I Sem.

DATA STRUCTURES

UNIT I: Recursion and Linear Search:
Preliminaries of algorithm, Algorithm analysis and complexity.

Recursion: Definition, Design Methodology and Implementation of recursive algorithms, Linear and binary recursion, recursive algorithms for factorial function, GCD computation, Fibonacci sequence, Towers of Hanoi, Tail recursion

List Searches using Linear Search, Binary Search, *Fibonacci Search*,

UNIT II: Sorting Techniques:
Basic concepts, Sorting by : insertion (Insertion sort), selection (heap sort), exchange (bubble sort, quick sort), distribution (radix sort) and merging (merge sort) *Algorithms.*

UNIT III: Stacks and Queues:
Basic Stack Operations, Representation of a Stack using Arrays, Stack Applications: Reversing list, Factorial Calculation, In-fix- to postfix Transformation, Evaluating Arithmetic Expressions.

Queues: Basic Queues Operations, Representation of a Queue using array, Implementation of Queue Operations using Stack, Applications of Queues-Round robin Algorithm, Enqueue, Dequeue, Circular Queues, Priority Queues.

UNIT IV: Linked Lists:
Introduction, single linked list, representation of a linked list in memory, Operations on a single linked list, merging two single linked lists into one list, Reversing a single linked list, applications of single linked list to represent polynomial expressions and sparse matrix manipulation, Advantages and disadvantages of single linked list, Circular linked list, Double linked list

UNIT V: Trees:
Basic tree concepts, Binary Trees: Properties, Representation of Binary Trees using arrays and linked lists, operations on a Binary tree , Binary Tree Traversals (recursive), Creation of binary tree from in-order and pre(post)order traversals,

UNIT VI: Advanced concepts of Trees:
Tree Travels using stack (non recursive), Threaded Binary Trees. Binary search tree, Basic concepts, BST operations: insertion, deletion,
Balanced binary trees – need, basics and applications in computer science (No operations)

UNIT VII: Graphs:
Basic concepts, Representations of Graphs: using Linked list and adjacency matrix, Graph algorithms
Graph Traversals (BFS & DFS), applications: Dijkstra's shortest path, Transitive closure, Minimum Spanning Tree using Prim's Algorithm, warshall's Algorithm.

Unit VIII: Sets:
Definition, Representation of Sets using Linked list, operations of sets using linked lists, application of sets-Information storage using bit strings

Abstract Data Type Introduction to abstraction, Model for an Abstract Data Type, ADT Operations, ADT Data Structure, ADT Implementation of stack and queue .

TEXT BOOKS:

1. Data Structures, 2/e, Richard F, Gilberg , Forouzan, Cengage
2. Data Structures and Algorithms, 2008,G.A.V.Pai, TMH

REFERENCE BOOKS:

1. Data Structure with C, Seymour Lipschutz, TMH
2. Classic Data Structures, 2/e, Debasis ,Samanta,PHI,2009
3. Fundamentals of Data Structure in C, 2/e, Horowitz,Sahni, Anderson Freed,University Prees

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – I Sem.

ELECTRONIC DEVICES AND CIRCUITS LAB

PART A : (Only for viva voce Examination)

ELECTRONIC WORKSHOP PRACTICE (in 6 lab sessions) :

1. Identification, Specifications, Testing of R, L, C Components (Colour Codes), Potentiometers, Switches (SPDT, DPDT, and DIP), Coils, Gang Condensers, Relays, Bread Boards.
2. Identification, Specifications and Testing of Active Devices, Diodes, BJTs, Lowpower JFETs, MOSFETs, Power Transistors, LEDs, LCDs, Optoelectronic Devices, SCR, UJT, DIACs, TRIACs, Linear and Digital ICs.
3. Soldering practice – Simple Circuits using active and passive components.
4. Single layer and Multi layer PCBs (Identification and Utility).
5. Study and operation of
   - Multimeters (Analog and Digital)
   - Function Generator
   - Regulated Power Supplies
   1. Study and Operation of CRO.

PART B : (For Laboratory examination – Minimum of 10 experiments)

1. **Frequency measurment using Lissajous Figures**
2. PN Junction diode characteristics A. Forward bias B. Reverse bias.(cut-in voltage & Resistance calculations)
3. Zener diode characteristics and Zener as a regulator
4. Transistor CB characteristics (Input and Output) & h Parameter calculations
5. Transistor CE characteristics (Input and Output) & h Parameter calculations
6. Rectifier without filters (Full wave & Half wave)
7. Rectifier with filters (Full wave & Half wave)
8. FET characteristics
9. SCR Charecteristics
10. UJT Charectristics
11. CE Amplifier
12. CC Amplifier (Emitter Follower).

PART C:

Equipment required for Laboratories:

1. Regulated Power supplies (RPS) - 0-30v
2. CROs - 0-20M Hz.
3. Function Generators - 0-1 M Hz.
4. Multimeters
5. Decade Resitance Boxes/Rheostats
6. Decade Capacitance Boxes

7. Micro Ammeters (Analog or Digital) - 0-20 µA, 0-50µA, 0-100µA, 0-200µA
8. Voltmeters (Analog or Digital) - 0-50V, 0-100V, 0-250V
9. Electronic Components - Resistors, Capacitors, BJTs, LCDs, SCRs, UJTs, FETs, LEDs, MOSFETs,diodes,transistors

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – I Sem.

DATA STRUCTURES LAB

Exercise 1:

Write recursive programme which computes the n^{th} Fibonacci number, for appropriate values of n.

Analyze behavior of the programme Obtain the frequency count of the statement for various values of n.

Exercise 2:

Write recursive programme for the following

a) Write recursive C programe for calculation of Factorial of an integer
b) Write recursive C programe for calculation of GCD (n, m)
c) Write recursive C programe for Towers of Hanoi : N disks are to be transferred from peg S to peg D with Peg I as the intermediate peg.

Exercise 3:

a) Write C programs that use both recursive and non recursive functions to perform Linear search for a Key value in a given list.
b) Write C programs that use both recursive and non recursive functions to perform Binary search for a Key value in a given list.
c) Write C programs that use both recursive and non recursive functions to perform Fibonacci search for a Key value in a given list.

Exercise 4:

a) Write C programs that implement Bubble sort, to sort a given list of integers in ascending order
b) Write C programs that implement Quick sort, to sort a given list of integers in ascending order
c) Write C programs that implement Insertion sort,to sort a given list of integers in ascending order

Exercise 5:

Write C programs that implement heap sort, to sort a given list of integers in ascending order
d) Write C programs that implement radix sort, to sort a given list of integers in ascending order
e) Write C programs that implement merge sort, to sort a given list of integers in ascending order

Exercise 6:

a) Write C programs that implement stack (its operations) using arrays
b) Write C programs that implement stack (its operations) using Linked list

Exercise 7:

a) Write a C program that uses Stack operations to Convert infix expression into postfix expression
a) Write C programs that implement Queue (its operations) using arrays.
b) Write C programs that implement Queue (its operations) using linked lists

Exercise 8:

a) Write a C program that uses functions to create a singly linked list
b) Write a C program that uses functions to perform insertion operation on a singly linked list
c) Write a C program that uses functions to perform deletion operation on a singly linked list

Exercise 9:

d) Adding two large integers which are represented in linked list fashion.
e) Write a C programme to reverse elements of a single linked list.
f) Write a C programme to store a polynomial expression in memory using linked list
g) Write a C programme to representation the given Sparse matrix using arrays.
h) Write a C programme to representation the given Sparse matrix using linked list

Exercise10:

a) Write a C program to Create a Binary Tree of integers
b) Write a recursive C program, for Traversing a binary tree in preorder, inorder and postorder.
c) Write a non recursive C program, for Traversing a binary tree in preorder, inorder and postorder.
d) Program to check balance property of a tree.

Exercise 11:

a) Write a C program to Create a BST
b) Write a C programme to insert a note into a BST.
c) Write a C programme to delete a note from a BST.

Exercise 12:

a) Write a C programme to compute the shortest path of a graph using Dijkstra's algorithm
b) Write a C programme to find the minimum spanning tree using Warshall's Algorithm

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year –I Sem. (Common to All Branches)

ENGLISH COMMUNICATION PRACTICE
LIFE, LANGUAGE AND CULTURE EXPLORATIONS-I

Purpose of the Course: English for Semesters 3 is designed to provide the learners an opportunity to enhance their language skills through a reading of literary texts which will also help them relate themselves to different cultures vis-à-vis their own. Independent reading is also expected to increase spontaneity in expression among the learners.

Objectives: The Course aims at exposing the learners to nuances in culture, inculcating the habit of independent reading which provides the learners an opportunity to develop critical thinking and analytical skills that can be applied to any subject.

Content of the course: The literary pieces are carefully chosen from across cultures as samples of contemporary life and issues of global interest. This is meant to encourage students to relate language to personality development. In all, five stories have been selected for English Communication Practice.

Topics: Culture and traditions, philosophy, familial relationships, ethics, inter-personal relationships, ability to face disaster and poverty, tolerance.

Time frame/Hours of instruction: 2hrs per week (for pre-reading and post reading tasks of the lessons). Total number of hours per semester - 32.

Time Allocation: Reading of the text should be done at home. The class hours are meant for discussion, analysis and related activities. Project should be completed in consultation with the teacher.

Evaluation: The learner will be assessed on a continuous basis by way of projects and work-sheets given at the end of each story.

Stories selected for English Communication Practice

Life, Language and Culture:

1. The Cop and the Anthem by O. Henry
2. The Festival of the Sacred Tooth Relic in Sri Lanka
(based on the Travelogues of FA Hien Compiled by Ashok JainAssisted by Dhurjjati Sarma) **3.The Hawk and the Tree** by Mohammad Azam Rahnaward Zaryab
4. To Be or Not To Be by Zaheda Hina
5. Bade Bhai Saab(My Elder Brother) by Munshi Premchand
Recommended Book: Life, Language and Culture Explorations-I, Cengage Learning India Pvt. Ltd., New Delhi.

PROFESSIONAL ETHICS AND MORALS -I

Unit 1 What is profession? - Engineering and Professionalism - Two model s of Professionalism - Three Types of Ethics or Morality – The Negative face of Engineering Ethics - The Positive Face of Engineering Ethics - Responsibility in Engineering - Engineering Standards - The Standard Care – Blame-Responsibility and causation

Unit 2 Engineering Ethics – Variety of moral issues – types of inquiry moral dilemmas – moral autonomy – The problems of Many Hands – Kohlburg's theory – Gilligan's theory Impediments to Responsible Action

Unit 3 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 4 Engineer's Responsibility for Safety – Social and Value dimensions of Technology - Technology Pessimism – The Perils of Technological Optimism – The Promise of Technology – Computer Technology Privacy and Social Policy – Risk Benefit Analysis – Collegiality and loyalty–

Books:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering" McGraw Hill
2. Charles E Harris, Micheal J Rabins, "Engineering Ethics, Cengage Learning
3. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers, Oxford University Press
4. PSR Murthy, "Indian Culture Values and Professional Ethics", BS Publications
5. Caroline Whitback< Ethics in Engineering Practice and Research, Cambridgs University Press
6. Mike Martin and Roland Schinzinger, "Ethics in Engineering" McGraw Hill
7. Charles D Fleddermann, "Engineering Ethics", Prentice Hall.
8. George Reynolds, "Ethics in Information Technology", Cengage Learning

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – II Sem.

SOFTWARE ENGINEERING

UNIT I : Introduction to Software Engineering :
The evolving role of software, Changing Nature of Software, Software myths. (ref 1)
A Generic view of process : Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models. (ref 1)

UNIT II : Process Models :
The waterfall model, Incremental process models, Evolutionary process models, The Unified process. (ref 1)
Software Requirements : Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document. (ref 2)

UNIT III : Requirements Engineering Process :
Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. (ref 2)
System models : Context Models,Behavioral models Data models,Object models,structured methods. (ref 2)

UNIT IV : Design Engineering :
Design process and Design quality, Design concepts, the design model. (ref 2)
Creating an architectural design : Software architecture, Data design, Architectural styles and patterns, Architectural Design. (ref 2)

UNIT V : Object-Oriented Design :
Objects and object classes, An Object-Oriented design process, Design evolution. (ref 2)
Performing User interface design : Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation. (ref 1)

UNIT VI : Testing Strategies : A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging. (ref 1)
Product metrics : Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance. (ref 1)

UNIT VII : Metrics for Process and Products :
Software Measurement, Metrics for software quality. (ref 1)
Risk management : Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan. (ref 1)

UNIT VIII : Quality Management :
Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards. (ref 2)

TEXT BOOKS:

1. Software Engineering, 7/e , Roger S.Pressman , TMH
2. Software Engineering ,8/e, Sommerville, Pearson.

REFERENCE BOOKS:

1. Software Engineering, A Precise approach, Pankaj Jalote, Wiley
2. Software Engineering principles and practice, W S Jawadekar, TMH
3. Software Engineering concepts, R Fairley, TMH

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – II Sem.

PRINCIPLES OF PROGRAMMING LANGUAGES

UNIT I: Introduction:
The Art of Language Design, Programming Language Spectrum, Why Study Programming Languages? Compilation and Interpretation, Programming Environments, Overview of Compilation
Programming Language Syntax: Specifying Syntax: Regular Expressions and Context-Free Grammars, Scanning, Parsing, Theoretical Foundations

UNIT II: Names, Scopes, and Bindings:
The Notion of Binding Time, Object Lifetime and Storage Management, Scope Rules, Implementing Scope, The Meaning of Names within a Scope, The Binding of Referencing Environments, Macro Expansion, Separate Compilation

UNIT III: Semantic Analysis:
The Role of the Semantic Analyzer, Attribute Grammars, Evaluating Attributes, Action Routines, Space Management for Attributes, Decorating a Syntax Tree

UNIT IV: Control Flow:
Expression Evaluation, Structured and Unstructured Flow, Sequencing, Selection, Iteration, Recursion, Non determinacy

UNIT V: Data Types:
Type Systems, Type Checking, Records (Structures) and Variants (Unions), Arrays, Strings, Sets, Pointers and Recursive Types, Lists, Files and Input/ Output, Equality Testing and Assignment

UNIT VI: Subroutines and Control Abstraction:
Review of Stack Layout, Calling Sequences, Parameter Passing, Generic Subroutines and Modules, Exception Handling, Coroutines, Events
Concurrency: Concurrent Programming Fundamentals, Implementing Synchronization, Language-Level Mechanisms, Message Passing
Run-time Program Management: Late Binding of Machine Code, Inspection/Introspection

UNIT VII: Data Abstraction and Object Orientation:
Object-Oriented Programming, Encapsulation and Inheritance, Initialization and Finalization, Dynamic Method Binding, Multiple Inheritance.

UNIT VIII: Functional Languages:
Functional Programming Concepts, A Review/Overview of Scheme, Evaluation Order Revisited, Higher-Order Functions, Theoretical Foundations
Logic Languages: Logic Programming Concepts, Prolog, Theoretical Foundations, Logic Programming in Perspective

TEXT BOOKS:

1. Programming Language Pragmatics, 3/ e, Michael Scott, Elsevier, Morgan Kaufmann,2009
2. Concepts of Programming languages, Sebesta, 8/ e, PEA

REFERENCE BOOKS:

1. Programming Languages Design and Implementation , 4/e Pratt , Zelkowitz, PHI
2. Programming Languages ,Louden, 2 /e, Cengage,2003
3. Fundamentals of Programming languages, Horowitz, Galgotia

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – II Sem.

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

UNIT I: Basics of Object Oriented Programming (OOP):
Need for OO paradigm, A way of viewing world – Agents, responsibility, messages, methods, classes and instances, class hierarchies (Inheritance), method binding, overriding and exceptions, summary of oop concepts, coping with complexity, abstraction mechanisms.

UNIT II: Java Basics:
Data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, string handling.

UNIT III: Inheritance:
Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance. Member access rules, super uses, using final with inheritance, polymorphism, abstract classes.

UNIT IV: Packages and Interfaces:
Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces.

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

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

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

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

TEXT BOOKS:

1. Java: The complete reference, 7/e, Herbert schildt, TMH.
2. Java: How to Program, 8/e, Dietal, Dietal, PHI

REFERENCE BOOKS:

1. Learn Object Oriented Programming using Java, Venkateswarlu, E V Prasad, S. Chand
2. Programming in Java2, Dr K SomaSundaram, JAICO Publishing house
3. Object Oriented Programming through Java, P. Radha Krishna, University Press.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – II Sem.

COMPUTER ORGANIZATION

UNIT I: Instruction Set Architectures:
Levels of Programming Languages.,Assembly Language Instructions,Instruction Set Architecture Design,A Relatively Simple Instruction Set Architecture.,The 8085 Microprocessor Instruction Set Architecture.

UNIT II: Introduction to Computer Organization:
Basic Computer Organization,CPU Organization,Memory Subsystem Organization and Interfacing,I/O Subsystem Organization and Interfacing,A Relatively Simple Computer,An 8085-based Computer.

UNIT III: Register Transfer Languages:
Micro-operations and Register Transfer Language, Using RTL to Specify Digital Systems, More Complex Digital Systems and RTL.,VHDL-VHSIC Hardware Description Language.

UNIT IV: CPU Design:
Specifying a CPU, Design and Implementation of a Very Simple CPU,Design and Implementation of a Relatively Simple CPU, Shortcomings of the Simple CPUs,Internal Architecture of the 8085 Microprocessor, Microsequencer Control Unit Design, Basic Microsequencer Design,Design and Implementation of a Very Simple Microsequencer, Reducing the Number of Microinstructions, Microprogrammed Control vs. Hardwired Control.

UNIT V: Computer Arithmetic:
Unsigned Notation,Signed Notation,Binary Coded Decimal,Specialized Arithmetic Hardware,Floating Point Numbers

UNIT VI: Memory Organization
Hierarchical Memory Systems,Cache Memory,Virtual Memory,Beyond the Basics of Cache and Virtual Memory,Memory Management in a Pentium/Windows Personal Computer.

UNIT VII: Input/Output Organization:
Asynchronous Data Transfers, Programmed I/O,Interrupts., Direct Memory Access,I/O Processors, Serial Communication,Serial Communication Standards.

UNIT VIII: Advanced computing:
Reduced Instruction Set Computing: RISC Rationale,RISC Instruction Sets, Instruction Pipelines and Register Windows,Instruction Pipeline Conflicts, RISC vs. CISC,Introduction to Parallel Processing,Parallelism in Uniprocessor Systems,Organization of Multiprocessor Systems. Communication in Multiprocessor Systems, Memory Organization in Multiprocessor Systems, Multiprocessor Operating Systems and Software.

TEXT BOOKS:

1. Computer Systems Organization and Architecture, John D. Carpinelli, PEA, 2009

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,3/e, M.Moris Mano, PEA, 2007

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – II Sem.

DATABASE MANAGEMENT SYSTEMS

UNIT I : Introduction:
Data base System Applications, data base System VS file System, View of Data, Data Abstraction, nstances and Schemas, data Models, the ER Model,
Relational Model ,Other Models,Database Languages : DDL, DML, database Access for applications Programs ,data base Users and Administrator ,Transaction Management ,data base System Structure , Storage Manager, the Query Processor

UNIT II : History of Data base Systems:
Data base design and ER diagrams, Beyond ER Design Entities, Attributes and Entity sets, Relationships and Relationship sets, Additional features of ER Model, Concept Design with the ER Model ,Conceptual Design for Large enterprises.

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

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

UNIT V : Schema Refinement :
Problems Caused by redundancy, Decompositions , Problem related to decomposition , reasoning about FDS, FIRST, SECOND, THIRD Normal forms, BCNF ,Lossless join Decomposition ,Dependency preserving Decomposition, Schema refinement in Data base Design, Multi valued Dependencies, FORTH Normal Form.

UNIT VI : Transaction Concept:
Transaction State,Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability ,Implementation of Isolation, Testing for serializability, Failure classification,Storage,Recovery and Atomicity,Recovery algorithm.

UNIT VII : Storage and Indexing :
Data on External Storage , File Organization and Indexing, Cluster Indexes, Primary and Secondary Indexes , Index data Structures , Hash Based Indexing :Tree base Indexing ,Comparison of File Organizations ,Indexes and Performance Tuning.

UNIT VIII : Tree Structured Indexing :
Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM)
B+ Trees: A Dynamic Index Structure.

TEXT BOOKS:

1. Data base Management Systems, 3/e, Raghurama Krishnan, Johannes Gehrke, TMH
2. Data base System Concepts,5/e, Silberschatz, Korth, TMH

REFERENCE BOOKS:

1. Data base Management System, 5/e, Elmasri Navathe ,PEA
2. Introduction to Database Systems, 8/e, C.J.Date, PEA
3. Database System Concepts, Peter ROB,Coronel, Ceneage.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – II Sem.

FORMAL LANGUAGES AND AUTOMATA THEORY

UNIT I : Fundamentals:
Set, Representation of set, Types of sets, Operations on sets, Relation, Representation of a relation, Properties of a relation, Basic terminology of trees and graphs, Principle of mathematical induction, Strings, Alphabets, Languages, Operations on strings and languages, Finite state machine, definitions, Finite automaton model, Acceptance of strings and languages, Deterministic finite automaton (DFA) and Non-deterministic finite automaton (NFA), Transition diagrams and Language recognizers.

UNIT II: Finite Automata:
Acceptance of languages, Equivalence of NFA and DFA, NFA to DFA conversion, NFA with $\in$ - transitions, Significance, Conversion of NFA with $\in$ - transitions to NFA without $\in$ - transitions, Myhill-Nerode theorem, Minimization of finite automata, Equivalence between two DFA's, Finite automata with output - Moore and Mealy machines, Equivalence between Moore and Mealy machines, conversion of Moore to Mealy and Mealy to Moore.

UNIT III: Regular Languages:
Regular sets, Regular expressions, Operations and applications of regular expressions, Identity rules, Conversion of a given regular expression into a finite automaton, Conversion of finite automata into a regular expression, Pumping lemma for regular sets, Closure properties of regular sets (proofs not required).

UNIT IV: Grammar Formalism: Definition of a grammar, Language of a grammar, Types of grammars, Chomsky classification of languages, Regular grammars, Right linear and left linear grammars, Conversion from left linear to right linear grammars, Equivalence of regular grammar and finite automata, Inter conversion, Context sensitive grammars and languages, Linear bounded automata, Context free grammars and languages, Derivation trees, Leftmost and rightmost derivation of strings and Sentential forms.

UNIT V: Context Free Grammars:
Ambiguity, left recursion and left factoring in context free grammars, Minimization of context free grammars, Normal forms for context free grammars, Chomsky normal form, Greibach normal form, Pumping lemma for context free languages, Closure and decision properties of context free languages, Applications of context free languages.

UNIT VI: Pushdown Automata:
Pushdown automata, definition, model, Graphical notation, Instantaneous descriptions, Acceptance of context free languages, Acceptance by final state and acceptance by empty state and its equivalence, Equivalence of context free grammars and pushdown automata, Inter-conversion, Introduction to deterministic pushdown automata.

UNIT VII: Turing Machine:
Turing Machine, definition, model, Instantaneous descriptions, Representation of Turing machines, Design of Turing machines, Types of Turing machines, Computable functions, Unrestricted grammar, Recursive and recursively enumerable languages and Church's hypothesis.

UNIT VIII: Computability Theory:
LR(0) grammar, Decidable and un-decidable problems, Universal Turing machine, Halting problem of a Turing machine, Un-decidability of post's correspondence problem and modified post's correspondence problem, Turing reducibility, Definition of classes P and NP problems, NP complete and NP hard problems.

TEXT BOOKS:

1. Introduction to Automata Theory Languages & Computation, 3/e, Hopcroft, Ullman, PEA
2. Introduction to Theory of Computation, 2/e, Sipser, Thomson

REFERENCE BOOKS:

1.Theory of Computation, Rajesh Shukla,Cengage,2010

2.Theory of Computer Science, Automata languages and computation , 2/e, Mishra, Chandra shekaran, PHI

3.Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – II Sem.

OBJECT ORIENTED PROGRAMMING LAB

1. Use JDK 1.5 or above on any platform e.g. Windows or Unix.
2. Student is expected to complete any 16 programs.
3. The Fibonacci sequence is defined by the following rule. The first 2 values in the sequence are 1, 1. Every subsequent value is the sum of the 2 values preceding it. Write A Java Program (WAJP) that uses both recursive and non-recursive functions to print the n^{th} value of the Fibonacci sequence.
4. WAJP to demonstrate wrapper classes, and to fix the precision.
5. WAJP that prompts the user for an integer and then prints out all the prime numbers up to that Integer.
6. WAJP that checks whether a given string is a palindrome or not. Ex: MALAYALAM is a palindrome.
7. WAJP for sorting a given list of names in ascending order.
8. WAJP to check the compatibility for multiplication, if compatible multiply two matrices and find its transpose.
9. WAJP that illustrates how runtime polymorphism is achieved.
10. WAJP to create and demonstrate packages.
11. WAJP, using *StringTokenizer* class, which reads a line of integers and then displays each integer and the sum of all integers.
12. WAJP that reads on file name from the user then displays information about whether the file exists, whether the file is readable/writable, the type of file and the length of the file in bytes and display the content of the using *FileInputStream* class.
13. WAJP that displays the number of characters, lines and words in a text/text file.
14. Write an Applet that displays the content of a file.
15. WAJP that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the + - x / % operations. Add a text field to display the result.
16. WAJP for handling mouse events.
17. WAJP demonstrating the life cycle of a thread.
18. WAJP that correctly implements Producer-Consumer problem using the concept of Inter Thread Communication.
19. WAJP that lets users create Pie charts. Design your own user interface (with Swings & AWT).
20. WAJP that allows user to draw lines, rectangles and ovals.
21. WAJP that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result and then sends the result back to the client. The client displays the result on the console. For ex: The data sent from the client is the radius of a circle and the result produced by the server is the area of the circle.
22. WAJP to generate a set of random numbers between two numbers x1 and x2, and x1>0.
23. WAJP to create an abstract class named Shape, that contains an empty method named numberOfSides(). Provide three classes named Trapezoid, Triangle andHexagon, such that each one of the classes contains only the method numberOfSides(), that contains the number of sides in the given geometrical figure.
24. WAJP to implement a Queue, using user defined Exception Handling (also make use of throw, throws).
25. WAJP that creates 3 threads by extending Thread class. First thread displays “Good Morning” every 1 sec, the second thread displays “Hello” every 2 seconds and the third displays “Welcome” every 3 seconds. (Repeat the same by implementing Runnable)
26. Create an inheritance hierarchy of Rodent, Mouse, Gerbil, Hamster etc. In the base class provide methods that are common to all Rodents and override these in the derived classes to perform different behaviors, depending on the specific type of Rodent. Create an array of Rodent, fill it with different specific types of Rodents and call your base class methods.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech. – II Sem.

DATA BASE MANAGEMENT SYSTEMS LAB

1. Execute a single line and group functions for a table.
2. Execute DCL and TCL Commands.
3. Create and manipulate various DB objects for a table.
4. Create views, partitions and locks for a particular DB.
5. Write PL/SQL procedure for an application using exception handling.
6. Write PL/SQL procedure for an application using cursors.
7. Write a DBMS program to prepare reports for an application using functions.
8. Write a PL/SQL block for transaction operations of a typical application using triggers.
9. Write a PL/SQL block for transaction operations of a typical application using package.
10. Design and develop an application using any front end and back end tool (make use of ER diagram and DFD).
11. Create table for various relation
12. Implement the query in sql for a) insertion b) retrieval c) updation d) deletion
13. Creating Views
14. Writing Assertion
15. Writing Triggers
16. Implementing operation on relation using PL/SQL
17. Creating Forms
18. Generating Reports

Typical Applications – Banking, Electricity Billing, Library Operation, Pay roll, Insurance, Inventory etc.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

II Year B.Tech – II Sem. (Common to All Branches)

ENGLISH COMMUNICATION PRACTICE

For II Year B.Tech/B.Pharm – II Semester
Name of the Course: *Explorations II*
Life, Language and Culture

Purpose of the Course: English for Semester 4 is designed to provide the learners an opportunity to enhance their language skills through a reading of literary texts which will also help them relate themselves to different cultures vis-à-vis their own. Independent reading is also expected to increase spontaneity in expression among the learners.

Objectives: The Course aims at exposing the learners to nuances in culture, inculcating the habit of independent reading which provides the learners an opportunity to develop critical thinking and analytical skills that can be applied to any subject.

Content of the course: The literary pieces are carefully chosen from across cultures as samples of contemporary life and issues of global interest. This is meant to encourage students to relate language to personality development. In all, five literary pieces for Explorations II have been selected and another showcasing a holistic approach to life that can help one develop into better individuals and professionals.

Topics: Culture and traditions, philosophy, familial relationships, ethics, inter-personal relationships, ability to face disaster and poverty, tolerance.

Time frame/Hours of instruction: 2 hrs per week (for pre-reading and post reading tasks of the lessons). Total number of hours per semester - 32.

Time Allocation for each unit: Reading of the text should be done at home. The class hours are meant for discussion, analysis and related activities. Project should be completed in consultation with the teacher.

The title of the book

Explorations- II Life, Language and Culture
The stories included are 1. Morning Bells by Jayashree Mohanraj
2.The Power of the Plate of Rice by Ifeoma Okoye
3. Famadihana and the Other Rituals by Jayashree Mohanraj
4. Dial "000" by Barry Rosenberg
5. Tsunami Religion by Anjali Prashar

1. Prescribed Textbook

Life, Language and Culture : Explorations -2 , Cengage Learning India Pvt. Ltd., New Delhi.

PROFESSIONAL ETHICS AND MORALS -II

Unit 1 Human Values - Morals, Values, and Ethics – Integrity - Work Ethic – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage – Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Spirituality – Character

Unit 2 Engineering Ethics – consensus – controversy – Models of Professional Roles – theories about right action – Self – interest – customs and religion – uses of ethical theories

Unit 3 Engineer's Responsibility for Rights - respect for authority – conflicts of interest- Occupational crime – professional rights and employee rights – Communicating Risk and Public Policy- collective bargaining

Unit 4 Global Issues- Multinational Corporations – Environmental Ethics – Engineers as Managers , Advisors, and experts witnesses – moral leadership sample code of ethics like ASME, ASCE, IEEE, IETE, Institute of Engineers – Problem of Bribery, Extortion and Grease payments – Problem of Nepotism, Excessive Gifts – Paternalism – Different business practices – Negotiating Taxes.

Books:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering" McGraw Hill
2. Charles E Harris, Micheal J Rabins, "Engineering Ethics, Cengage Learning
3. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers, Oxford University Press
4. PSR Murthy, "Indian Culture Values and Professional Ethics", BS Publications
5. Caroline Whitback< Ethics in Engineering Practice and Research, Cambridgs University Press
6. Mike Martin and Roland Schinzinger, "Ethics in Engineering" McGraw Hill
7. Charles D Fleddermann, "Engineering Ethics", Prentice Hall.
8. George Reynolds, "Ethics in Information Technology", Cengage Learning

w.e.f. 2010-2011 academic year

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA-533003, Andhra Pradesh (India)

COMPUTER SCIENCE AND ENGINEERING

COURSE STRUCTURE

III YEAR **I SEMISTER**

S. No.	Subject	T	P	Credits
1	Compiler Design	4	-	4
2	Computer Networks	4	-	4
3	Micro Processors and Multicore Systems	4	-	4
4	Operating Systems	4	-	4
5	Computer Graphics	4	-	4
6	Advanced Data Structures	4	-	4
7	Operating System & Compiler Design Lab	-	3	2
8	Advanced Data Structures Lab	-	3	2
9	IPR and Patents- 1	2	-	-
	Total			**28**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – I Sem.

COMPILER DESIGN

Unit – I : Overview of language processing – preprocessors – compiler – assembler – interpreters – linkers & loaders - structure of a compiler – phases of a compiler.

Unit – II : Lexical Analysis – Role of Lexical Analysis – Lexical Analysis Vs. Parsing – Token, patterns and Lexemes – Lexical Errors – Regular Expressions – Regular definitions for the language constructs – Strings, Sequences, Comments – Transition diagram for recognition of tokens, Reserved words and identifiers, Examples.

Unit – III : Syntax Analysis – Role of a parser – classification of parsing techniques – Top down parsing – First and Follow- LL(1) Grammars, Non-Recursive predictive parsing – Error recovery in predictive parsing.

Unit – IV : Introduction to simple LR – Why LR Parsers – Model of an LR Parsers – Operator Precedence-Shift Reduce Parsing – Difference between LR and LL Parsers, Construction of SLR Tables.

Unit – V : More powerful LR parses, construction of CLR (1), LALR Parsing tables, Dangling ELSE Ambiguity, Error recovery in LR Parsing.

Unit – VI : Semantic analysis, SDT, evaluation of semantic rules, symbol tables, use of symbol tables. Runtime Environment: storage organization, stack allocation, access to non-local data, heap management, parameter passing mechanisms.

Unit – VII: Intermediate code , three address code, quadraples, triples, abstract syntax trees, basic blocks, CFG. Machine independent code optimization - Common sub expression elimination, constant folding, copy propagation, dead code elimination, strength reduction, loop optimization, procedure inlining.

Unit – VIII: Machine dependent code optimization: Peephole optimization, register allocation, instruction scheduling, inter procedural optimization, garbage collection via reference counting.

Text books:

1. Compilers, Principles Techniques and Tools- Alfred V Aho, Monical S Lam, Ravi Sethi, Jeffrey D. Ullman,2nd ed, Pearson,2007.
2. Principles of compiler design, V. Raghavan, 2nd ed, TMH, 2011.
3. Principles of compiler design, 2nd ed, Nandini Prasad, Elsevier

Reference books:

1. http://www.nptel.iitm.ac.in/downloads/106108052/
2. Compiler construction, Principles and Practice, Kenneth C Louden, CENGAGE
3. Implementations of Compiler, A new approach to Compilers including the algebraic methods, Yunlinsu, SPRINGER

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – I Sem.

COMPUTER NETWORKS

Unit - I: Introduction: Data Communication, components, data representation, data flow; **Networks**: distributed processing, network criteria, physical structures, network models, categories of network, inter connection of networks; **The Internet:** brief history**,** internet today**, Protocols &standard layers:** protocols, standards, standard organization, internet standards**, Layered Tasks:** sender, receiver, carrier, hierarchy. **The OSI models:** layered architecture, peer to peer process, encapsulation**, Layers in OSI model**: physical layer, data link layer, Network layer, transport layer, session layer , presentation layer , application layer , **TCP/IP protocol suite**: physical and data link layers, network layer, transport layer, application layer, **Addressing**: physical address, logical address, port address, specific address.

Unit-II: Physical layer and overview of PL Switching: Multiplexing: frequency division multiplexing, wave length division multiplexing, synchronous time division multiplexing, statistical time division multiplexing, **introduction to switching**: Circuit Switched Networks, Datagram Networks, Virtual Circuit Networks.

Unit -III : Framing: fixed size framing, variable size framing, , Flow control, Error control ,**Error detections Error correction**: block coding, linear block codes, **cyclic codes:** cyclic redundancy check, hard ware implementation, polynomials, cyclic code analysis, advantages**, Checksum:** idea, one's complement internet check sum, services provided to Network Layer, **elementary Data link Layer protocols-** Unrestricted Simplex protocol, Simplex Stop-and-Wait Protocol, Simplex protocol for Noisy Channel.

Unit-IV: Sliding Window Protocol: One bit, Go back N, Selective Repeat-Stop and wait protocol , data link layer **HDLC**: configuration and transfer modes, frames, control field, **point to point protocol(PPP):** framing, transition phase, multi plexing, multi link PPP.

Unit -V: Random Access : ALOHA, career sense multiple access (CSMA), career sense multiple access with collision detection, career sense multiple access with collision avoidance , **Controlled Access**: Reservation, Polling, Token Passing, **Channelization**: frequency division multiple access(FDMA),time division multiple access(TDMA), code division multiple access(CDMA).

Unit-VI: IEEE Standards: data link layer, physical layer, Manchester encoding, **Standard Ethernet**: MA C Sub Layer, physical layer, **Fast Ethernet**: MAC Sub Layer, physical layer, **IEE-802.11:** Architecture, MAC sub layer, addressing mechanism , frame structure.

Unit -VII : Blue tooth : Architecture, blue tooth layers, Protocol stack, Frame structure ,**cellur Telephony**- frequency reuse Transmitting, receiving, roaming, **Satellite Networks** –GEO,LEO,MEO satellite.

Unit-VIII : Data Link Layer Switching-Bridges, Local internet working Spanning tree bridges, remote bridges, switch virtual LANs.

Text Books:

1) Data communications and networking 4th edtion Behrouz A Fourzan, TMH
2) Computer networks 4th editon Andrew S Tanenbaum, Pearson
3) Computer networks, Mayank Dave, CENGAGE

Reference Books:

1) http://nptel.iitm.ac.in/courses/Webcourse- contents/IIT%20Kharagpur/Computer%20networks/New_index1.html
2) Computer networks, A system Approach, 5th ed, Larry L Peterson and Bruce S Davie, Elsevier

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – I Sem.

MICROPROCESSORS AND MULTICORE SYSTEMS

UNIT I: overview of microcomputer structure and operation., execution of a three instruction program, microprocessor evolution and types, the 8086 micro processor family , 8086 internal architecture , introduction to programming the 8086,**8086 family assembly language programming :**Program development steps , constructing the machine codes for 8086 instructions, writing programs for use with an assembler, assembly language program development tools.

UNIT II : Implementing standard program structures in 8086 assembly language
Simple sequence programs, jumps, flags and conditional jumps, if-then, if-then-else and multiple if-then-else programs, while-do programs, repeat-until programs, instruction timing and delay loops.

UNIT III : Strings , procedures and macros
The 8086 string instructions, writing and using procedures, writing and using assembler macros.

UNIT IV: 8086 instruction descriptions and assembler directives
Instruction descriptions, assembler directives , DB, DD, DQ, DT, DW, end-program, endp, ends, equ ,even-align on even memory address, extrn , global, public / extrn, group, include, label, length- not implemented IBM MASM, name – off set, ORG, proc, ptr, segment, short, type.

UNIT V: 8086: 8086 interrupts and interrupt applications
8086 interrupts and interrupt responses, hardware interrupt applications, Software Interrupts, priority of interrupts, software interrupt applications, programming.

UNIT VI: 8086 ASSEMBLY LANGUAGE PROGRAMMES - Bit & Logic operations, strings, procedures, Macros, Number Format, Conversions, ASCII operations, signed Numbers Arithmetic, Programming using High level language constructs.
UNIT VII: CPU: architecture of Intel 80286 CPU, Intel 80386, and 32-bit CPU- 80486-Microprocessor(No instruction set).
UNIT VIII: Introduction to Pentium Processor architecture, dual Core and Core Duo –Basic characteristics, Architecture and comparison with other CPU's.

Text Books:

1. Microprocessors and Interfacing, Douglas V Hall, Revised 2nd ed, TMH
2. The X86 Microprocessors, architecture, Programming and Interfacing(8086 to Pentium), Lyla B Das, PEA
3. The 8086 Microprocessor: Programming & Interfacing the PC, Ayala: Cengage

Reference Books:

1. http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT-KANPUR/microcontrollers/micro/ui/Course_home4_29.htm
2. http://nptel.iitm.ac.in/courses/Webcourse-contents/IISc-BANG/Microprocessors%20and%20Microcontrollers/pdf/Teacher_Slides/mod1/M1L3.pdf
3. Microcomputer Systems: The 8086.8088 Family, Architecture, Programming and Design, Yu-Cheng Liu, Glenn A Gibson, 2nd ed,
4. The 8086 Microprocessor: Programming & Interfacing the PC, Kenneth J Ayala, CENGAGE
5. Microprocessors, The 8086/8088, 80186/80286, 80386/80486 and the Pentium Family, Nilesh B Bahadure, PHI
6. Microprocessors and Microcontrollers, Senthil Kumar, Saravanan, Jeevanathan, OXFORD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – I Sem.

OPERATING SYSTEMS

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

UNIT II : Process Management – Process concept- process scheduling, operations, Inter process communication. Multi Thread programming models. Process scheduling criteria and algorithms, and their evaluation.

UNIT III : Concurrency : Process synchronization, the critical- section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors, Synchronization examples

UNIT IV : Memory Management : Swapping, contiguous memory allocation, paging, structure of the page table , segmentation

UNIT V : Virtual Memory Management:
virtual memory, demand paging, page-Replacement, algorithms, Allocation of Frames, Thrashing

UNIT VI : Principles of deadlock – system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock,

UNIT VII : File system Interface- the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection.
File System implementation- File system structure, file system implementation, directory implementation, allocation methods, free-space management

UNIT VIII : Mass-storage structure overview of Mass-storage structure, Disk structure, disk attachment, disk scheduling, swap-space management

TEXT BOOKS :
1. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Operating Systems' – Internal and Design Principles Stallings, Sixth Edition–2005, Pearson education

REFERENCES :
1. http://nptel.iitm.ac.in/courses/Webcourse-contents/IISc-BANG/Operating%20Systems/New_index1.html
2. Operating systems- A Concept based Approach-D.M.Dhamdhere, 2nd Edition, TMH
3. Operating System A Design Approach-Crowley, TMH.
4. Modern Operating Systems, Andrew S Tanenbaum 3rd edition PHI.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – I Sem.

COMPUTER GRAPHICS

UNIT I : Introduction: Application of Computer Graphics, raster scan systems, random scan systems, raster scan display processors.
Output primitives : Points and lines, line drawing algorithms(Bresenham's and DDA Line derivations and algorithms), mid-point circle and ellipse algorithms.

UNIT II : Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms. Inside and outside tests.

UNIT III : 2-D geometrical transforms: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems. (p.nos 204-227 of text book-1).

UNIT IV : 2-D viewing : The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm.

UNIT V : 3-D object representation : Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces.

UNIT VI : 3-D Geometric transformations : Translation, rotation, scaling, reflection and shear transformations, composite transformations. 3D Viewing pipeline, clipping, projections(Parallel and Perspective).

UNIT VII : Visible surface detection methods: Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSPtree methods, area sub-division and octree methods.

UNIT VIII : Computer animation : Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.

TEXT BOOKS:

1. Computer Graphics *C* version, Donald Hearn, M.Pauline Baker, Pearson
2. Computer Graphics with Virtual Reality Systems, Rajesh K Maurya, Wiley
3. Introduction to Computer Graphics, Using Java 2D and 3D, Frank Klawonn, Springer
4. Computer Graphics, Steven Harrington, TMH
5. Computer Graphics, Amarendra N Sinha, Arun Udai, TMH

REFERENCE BOOKS:

1. Computer Graphics Principles & practice, 2/e, Foley, VanDam, Feiner, Hughes, Pearson
2. Computer Graphics, Peter, Shirley, CENGAGE
3. Principles of Interactive Computer Graphics, Neuman , Sproul, TMH.
4. The Computer Graphics manual, Vol 2, David, Soloman, Springer
5. Procedural elements for Computer Graphics, David F Rogers, 2/e, TMH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – I Sem.

ADVANCED DATA STRUCTURES
(Note: C++ and Java implementation is not included in the syllabus)

Unit I : Dictionaries : Sets, Dictionaries, Hash Tables, Open Hashing, Closed Hashing (Rehashing Methods), Hashing Functions(Division Method, Multiplication Method, Universal Hashing), Analysis of Closed Hashing Result (Unsuccessful Search, Insertion, Successful Search, Deletion), Hash Table Restructuring, Skip Lists, Analysis of Skip Lists. (Reference 1)

Unit II : Balanced Trees : AVL Trees: Maximum Height of an AVL Tree, Insertions and Deletions. 2-3 Trees : Insertion, Deletion.

Unit III : Priority Queues :
Binary Heaps : Implementation of Insert and Delete min, Creating Heap.
Binomial Queues : Binomial Queue Operations, Binomial Amortized Analysis, Lazy Binomial Queues

Unit IV : Graphs : Operations on Graphs: Vertex insertion, vertex deletion, find vertex, edge addition, edge deletion, Graph Traversals- Depth First Search and Breadth First Search(Non recursive) .
Graph storage Representation- Adjacency matrix, adjacency lists.

Unit V : Graph algorithms : Minimum-Cost Spanning Trees- Prim's Algorithm, Kruskal's Algorithm Shortest Path Algorithms: Dijkstra's Algorithm, All Pairs Shortest Paths Problem: Floyd's Algorithm, Warshall's Algorithm,

Unit VI : Sorting Methods : Order Statistics: Lower Bound on Complexity for Sorting Methods: Lower Bound on Worst Case Complexity, Lower Bound on Average Case Complexity, Heap Sort, Quick Sort, Radix Sorting, Merge Sort.

Unit VII : Pattern matching and Tries : Pattern matching algorithms- the Boyer –Moore algorithm, the Knuth-Morris-Pratt algorithm
Tries: Definitions and concepts of digital search tree, Binary trie, Patricia , Multi-way trie

Unit VIII : File Structures: Fundamental File Processing Operations-opening files, closing files, Reading and Writing file contents, Special characters in files.
Fundamental File Structure Concepts- Field and record organization, Managing fixed-length, fixed-field buffers.
(Reference 5)

Text Books :

1. Data Structures, A Pseudocode Approach, Richard F Gilberg, Behrouz A Forouzan, Cengage.
2. Fundamentals of DATA STRUCTURES in C: 2nd ed, , Horowitz , Sahani, Anderson-freed, Universities Press
3. Data structures and Algorithm Analysis in C, 2nd edition, Mark Allen Weiss, Pearson

Reference Books:

1. Web : http://lcm.csa.iisc.ernet.in/dsa/dsa.html
2. http://utubersity.com/?page_id=878
3. http://freevideolectures.com/Course/2519/C-Programming-and-Data-Structures
4. http://freevideolectures.com/Course/2279/Data-Structures-And-Algorithms
5. File Structures :An Object oriented approach with C++, 3rd ed, Michel J Folk, Greg Riccardi, Bill Zoellick
6. C and Data Structures: A Snap Shot oriented Treatise with Live examples from Science and Engineering, NB Venkateswarlu & EV Prasad, S Chand, 2010.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – I Sem.

OPERATING SYSTEM & COMPILER DESIGN LAB

PART – A:

1. Design a Lexical analyzer for the given language. The lexical analyzer should ignore redundant spaces, tabs and newlines. It should also ignore comments. Although the syntax specification states that identifiers can be arbitrarily long, you may restrict the length to some reasonable value.
2. Implement the lexical analyzer using JLex, flex or lex or other lexical analyzer generating tools.
3. Design Predictive parser for the given language
4. Design LALR bottom up parser for the given language.
5. Convert the BNF rules into Yacc form and write code to generate abstract syntax tree.

PART- B:

1. Simulate the following CPU scheduling algorithms
   a) Round Robin b) SJF c) FCFS d) Priority
2. Simulate all file allocation strategies
   a) Sequentialb) 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.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – I Sem.

ADVANCED DATA STRUCTURES Lab

1. To implement functions of Dictionary using Hashing (division method, Multiplication method, Universal hashing)
2. To perform various operations i.e, insertions and deletions on AVL trees
3. To perform various operations i.e., insertions and deletions on 2-3 trees.
4. To implement operations on binary heap.
5. To implement operations on graphs
   i) vertex insertion
   ii) Vertex deletion
   iii) finding vertex
   iv)Edge addition and deletion
6. . To implement Depth First Search for a graph nonrecursively.
7. To implement Breadth First Search for a graph nonrecursively.
8. To implement Prim's algorithm to generate a min-cost spanning tree.
9. To implement Krushkal's algorithm to generate a min-cost spanning tree.
10. To implement Dijkstra's algorithm to find shortest path in the graph.
11. To implement pattern matching using Boyer-Moore algorithm.
12. To implement Knuth-Morris-Pratt algorithm for pattern matching.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – I Sem.

INTELLECTUAL PROPERTY RIGHTS AND PATENTS – 1

Unit 1 Introduction to Intellectual Property Law – The Evolutionary Past - The IPR Tool Kit- Para - Legal Tasks in Intellectual Property Law – Ethical obligations in Para Legal Tasks in Intellectual Property Law - Introduction to Cyber Law – Innovations and Inventions Trade related Intellectual Property Right

Unit 2 Introduction to Trade mark – Trade mark Registration Process – Post registration procedures – Trade mark maintenance - Transfer of Rights - Inter partes Proceeding – Infringement - Dilution Ownership of Trade mark – Likelihood of confusion - Trademarks claims – Trade marks Litigations – International Trade mark Law –

Unit 3 Introduction to Copyrights – – Principles of Copyright Principles -The subjects Matter of Copy right – The Rights Afforded by Copyright Law – Copy right Ownership, Transfer and duration – Right to prepare Derivative works – Rights of Distribution – Rights of Perform the work Publicity Copyright Formalities and Registrations - Limitions - Copyright disputes and International Copyright Law – Semiconductor Chip Protection Act

Unit 4 Introduction to Trade Secret – Maintaining Trade Secret – Physical Secrurity –Employee Limitation - Employee confidentiality agreement - Trade Secret Law - Unfair Competation – Trade Secret Letigation – Breach of Contract – Applying State Law

Books:

1. Deborah E.Bouchoux: "Intellectual Property". Cengage learning , New Delhi
2. Kompal Bansal & Parishit Bansal "Fundamentals of IPR for Engineers", BS Publications (Press)
3. Cyber Law. Texts & Cases, South-Western's Special Topics Collections
4. Prabhuddha Ganguli: ' Intellectual Property Rights" Tata Mc-Graw –Hill, New Delhi
5. Richard Stim: "Intellectual Property", Cengage Learning, New Delhi.
6. R.Radha Krishnan, S.Balasubramanian: "Intellectual Property Rights", Excel Books. New Delhi
7. M.Ashok Kumar and Mohd.Iqbal Ali: "Intellectual Property Right" Serials Pub.

w.e.f. 2010-2011 academic year

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA-533003, Andhra Pradesh (India)

COMPUTER SCIENCE AND ENGINEERING

COURSE STRUCTURE

III B Tech. II Semester				
S.No	**Subject**	**P**	**C**	**Credits**
1	Advanced Computer Networks			4
2	Computer Architecture			4
3	Design and Analysis of Algorithms			4
4	UNIX Programming			4
5	Management Science			4
6	Advanced Java and Web Technologies			4
7	Computer Networks and Unix Lab			2
8	Advanced Java and Web Technologies Lab			2
9	Intellectual Property Rights and Patents-2	2		-

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – II Sem.

ADVANCED COMPUTER NETWORKS

Unit -I : Network layer: Network Layer design issues: store-and forward packet switching, services provided transport layers, implementation connection less services, implementation connection oriented services, comparison of virtual – circuit and datagram subnets

Routing Algorithm –shortest path routing, flooding, distance vector routing, link state routing, Hierarchical routing, Broadcast routing, Multicasting routing, routing for mobiles Hosts, routing in Adhoc networks- **congestion control algorithms**-Load shedding, Congestion control in Data gram Subnet.

Unit-II : IPV4 Address address space, notations, classful addressing, classless addressing network addressing translation(NAT) , **IPV6 Address** structure address space, **Internetworking** need for network layer internet as a data gram, internet as connection less network.

Unit-III : IPV4 datagram, Fragmentation, checksum, options. **IPV6** Advantages, packet format, extension Headers, Transition form IPV4 to IPV6

Unit – IV: Process to process delivery: client/server paradigm, multiplexing and demultiplexing, connectionless versus connection oriented services, reliable versus reliable.
UDP: well known ports for UDP, user data gram, check sum, UDP operation, and uses of UDP
TCP: TCP services, TCP features, segement, A TCP connection, Flow control, error control, congestion control.
SCTP: SCTP services SCTP features, packet format, An SCTP association, flow control, error control.

Unit –V: Congestion control: open loop congestion control, closed loop congestion control, Congestion control in TCP, frame relay, **QUALITY OF SERVICE**: flow characteristics, flow classes **TECHNIQUES TO IMPROVE QOS**: scheduling, traffic shaping, resource reservation, admission control.

Unit –VI: Domain name system: The name space, resource records, name servers
E-mail: architecture and services, the user agent, message formats, message transfer, final delivery
Www: architecture overview, static web documents, dynamic web documents, Hyper text transfer protocol, performance elements, the wireless web.
Multimedia: introduction digital a audio , Audio compression, streaming audio, internet radio, voice over IP, introduction to video, video compression, video on demand, the MBone-the multicast back bone

Unit –VII: Emerging trends Computer Networks:
Motivation for mobile computing: protocol Stack Issues in Mobile Computing Environment, Mobility issues in mobile computing, data dissemination security issues mobile networks ; **Mobile Ad hoc networks** :applications of Ad hoc networks, challenges and issues in MANETS,MAC layers issues, routing protocols in MANET, transport layer issues, Ad Hoc networks security.

Unit –VIII: Wireless sensors networks: WSN functioning, operation system support in sensor devices, WSN Characteristics, sensor network operation, sensor Architecture: cluster management;
Wireless mesh networks WMN design, Issues in WMNs;
Computational grids: Grid features, issue in Grid construction technology;
P2P networks: characteristics' and addressing, components of SIP, SIP session establishment, SIP security, HTMLS.

Text Books :
1) Data communications and networking 4th edtion Behrouz A Fourzan, TMH

2) Computer networks 4th editon Andrew S Tanenbaum, Pearson
3) Computer networks, Mayank Dave, CENGAGE

Reference Books:

1) http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT%20Kharagpur/Computer%20networks/New_index1.html
2) http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT%20Kharagpur/Computer%20networks/New_index1.html
3) Computer networks, A system Approach, 5th ed, Larry L Peterson and Bruce S Davie, Elsevier

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – II Sem.

COMPUTER ARCHITECTURE

UNIT I: Parallel Computer: The state of computing- Computer Development Milestones, Elements of Modern Computers, Evolution of Computer Architecture, System Attributes to performance; Multiprocessors and Multicomputers-Shared Memory Multiprocessors, Distributed Memory Multiprocessors, A Taxonomy of MIMD Computers; Multivector and SIMD Computers-Vector Super computers, SIMD Supercomputers.

UNIT II: Memory Hierarchy Design: Introduction- Basic Memory Hierarchy, Optimization of Cache Performance- Small and Simple First-Level Caches to Reduce Hit Time and Power, Way Prediction to Reduce Hit Time, Pipelined Cache Access to Increase Cache Bandwidth, Non blocking Caches to Increase Cache Bandwidth; Virtual Memory and Virtual Machines- Protection Via Virtual Memory, Protection via Virtual Machines .

UNIT III: Design space of processors, Instruction-set Architectures, Characteristics of typical CISC and RISC Architecture, Hierarchical Memory Technology, Inclusion, Coherence and Locality.

UNIT IV: Linear and Nonlinear Pipeline Processors: Asynchronous and Synchronous models, Clocking and Timing control, Speedup, Efficiency and Throughput; Nonlinear pipeline processors: Reservation and Latency analysis- Problems, Collision Free Scheduling-problems, Instruction Execution Phases.

UNIT V: Multiprocessor and Multivector Computers- Hierarchical Bus Systems, Crossbar Switch and Multiport Memory; Multistage and Combining Networks- Routing, The Hot-Spot Problem, Applications and Drawbacks, Multistage Networks in Real Systems; Multivector Computers: Vector Processing Principles- Vector Instruction Types, Vector Access Memory Schemes, Cray Y-MP Multivector Multiprocessors- Cray Y-MP 816 System Organization, Multistage Crossbar Network in the Cray Y-MP 816.

UNIT VI: Cache Coherence and Message Passing Mechanisms- Cache Coherence problem-Two protocol approaches, Snoopy Bus Protocols, Directory based Protocols; Message Passing Mechanisms- Message-Routing Schemes, Deadlock Virtual Channels, Flow Control Strategies, Multicast Routing Algorithms.

UNIT VII: VSIMD and MIMD Computer Organizations- Implementation models, The CM-2 Architecture; A Synchronized MIMD Machine, Control Processors and Processing Nodes, Interprocessor Communications.

UNIT VIII: Trends in Parallel Systems: Forms of Parallelism- Structural Prallelism versus Instruction Level Parallelism, A Simple Parallel Computation, Parallel Algorithms, Stream Processing; Cray Line of Computer Systems;

Text Books:

1. KAI HWANG & NARESH JOTWANI, "Advanced Computer Architecture- Parallelism, Scalability, Programmability" Second Edition, Mc Graw Hill Publishing.
2. HENNESSY PATTERSON, "Computer Architecture- A Quantitative Approach" Fifth Edition, Elsevier

Reference Books:

1. http://www.google.co.in/search?q=nptel+computer+architecture&hl=en&sa=X&gbv=2&prmd=ivns&source=univ&tbm=vid&tbo=u&ei=n-leT-

quOcvjrAej1e2MBg&oi=video_result_group&ct=title&resnum=6&ved=0CCcQqwQwBQ&gs_sm=12&gs_upl=31219l31219l0l32141111110l0l0l0l0l203l203l2-1l1l0&oq=NPTEL+Comp&aq=6&aqi=g10&aql=

2. Computer Architecture, Concepts and Evolutions, Garrit A Blaauw, PEA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – II Sem.

DESIGN AND ANALYSIS OF ALGORITHMS

UNIT I : Introduction: Algorithm, Psuedo code for expressing algorithms, performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation, probabilistic analysis, Amortized analysis.

UNIT II : Disjoint Sets- disjoint set operations, union and find algorithms, spanning trees, connected components and bi-connected components.

UNIT III : Divide and conquer: General method , applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

UNIT IV : Greedy method: General method, applications-Job sequencing with dead lines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

UNIT V : Dynamic Programming: General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design.

UNIT VI : Backtracking: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

UNIT VII : Branch and Bound: General method, applications - Travelling sales person problem,0/1 knapsack problem-LC Branch and Bound solution, FIFO Branch and Bound solution.

UNIT VIII : NP-Hard and NP-Complete problems: Basic concepts, non deterministic algorithms, NP - Hard and NP Complete classes, Cook's theorem.

TEXT BOOKS :

1. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni and Rajasekharam, Universities Press.
2. The Algorithm Design Manual, 2nd edition, Steven S. Skiena, Springer.
3. Introduction to Algorithms, second edition, T.H.Cormen, C.E.Leiserson, R.L.Rivest and C.Stein,PHI Pvt. Ltd.

REFERENCE Books :

1. Introduction to the Design and Analysis of Algorithms, Anany Levitin, PEA
2. Design and Analysis of Algorithms, Parag Himanshu Dave, Himansu BAlachandra Dave, Pearson Education.

3. 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.
4. Design and Analysis of algorithms, Aho, Ullman and Hopcroft,Pearson education.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – II Sem.

UNIX PROGRAMMING

UNIT I : Introduction to Unix file system, vi editor, file handling utilities, security and file permissions, process utilities, disk utilities, networking commands, cp, mv, ln, rm, unlink, mkdir, rmdir, du, df, mount, umount, find, unmask, ulimit, ps, who, w, finger, arp, ftp, telnet, rlogin, text processing utilities and backup utilities, detailed commands to be covered are cat, tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, tar, cpio.

UNIT II : Working with the Bourne shell: what is a shell, shell responsibilities, pipes and input Redirection, output redirection, here documents, the shell as a programming language, shell meta characters, shell variables, shell commands, the environment, control structures, shell script examples.

UNIT III : Unix file structure, directories, files and devices, System calls, library functions, low level file access, usage of open, creat, read, write, close, lseek, stat, fstat, octl, umask, dup, dup2. The standard I/O (fopen, fclose, fflush, fseek, fgetc, getc, getchar, fputc, putc, putchar,fgets, gets) file and directory maintenance (chmod, chown, unlink, link, symlink, mkdir, rmdir, chdir, getcwd),Directory handling system calls (opendir, readdir, closedir,rewinddir, seekdir, telldir)

UNIT IV: Unix Process: What is process, process structure, starting new process, waiting for a process, zombie process, process control, process identifiers, system call interface for process management-fork, vfork, exit, wait, waitpid, exec, system.

UNIT V : Signals- Signal functions, unreliable signals, interrupted system calls, kill and raise functions, alarm, pause functions, abort, sleep functions.

UNIT VI : Interprocess Communication Overview: Introduction to IPC-IPC between processes on a single computer system, IPC between processes on different systems, pipes, FIFOs, streams and messages, namespaces

UNIT VII : Semaphores-Unix system-V semaphores, unix kernel support for semaphores, file locking with semaphores.

UNIT VIII : Sockets: Introduction, UNIX domain protocol, Socket addresses, elementary socket, System calls

TEXT BOOKS:

1. Unix Network Programming, W.R.Stevens Pearson/PHI.
2. Unix the ultimate guide, 3rd Edition, Sumitabha Das, TMH.
3. Unix and Shell Programming Behrouz A. ForouZan, Richard F Gilberg, CENGAGE

References

1. http://nptel.iitm.ac.in/courses/Webcourse-contents/IISc-BANG/Operating%20Systems/pdf/Lecture_Notes/Mod%2013_LN.pdf
2. Advanced UNIX Programming , N B Venkateswarlu, BS publications.2e.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – II Sem.

ADVANCED JAVA AND WEB TECHNOLOGIES

UNIT I : HTML tags, Lists, Tables, Images, forms, Frames. Cascading style sheets. Introduction to Java script.Objects in Java Script.Dynamic HTML with Java Script.

UNIT II: PHP Programming: Introducing PHP: Creating PHP script, Running PHP script. **Working with variables and constants:** Using variables,Using constants,Data types,Operators.**Controlling program flow:** Conditional statements,Control statements,Arrays,functions.Working with forms and Database.

UNIT III: Working with XML: Document type Definition,XML schemas, Document object model, XSLT, DOM and SAX.

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

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

UNIT-VI: Introduction to JSP: The Problem with Servelet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC.

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

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

UNIT VIII: AJAX A New Approach: Introduction to AJAX,Integrating PHP and AJAX. Consuming WEB services in AJAX**:** (SOAP,WSDL,UDDI)

TEXT BOOKS:

1. Web Technologies – Black Book,Kogent Learning solutions Inc sol. Dreamtech press. (Units- 1,2,3,8)
2. The complete Reference Java 2, 7th Edition by Patrick Naughton and Herbert Schildt. TMH (Units- 4,5,6,7)
3. An Introduction to Web Design + Programming, Wang, Katila, CENGAGE

REFERENCE BOOKS:

1. Web Technologies, Uttam K Roy - Oxford
2. Head first Java – Kathy seirra -Orielly –
3. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson
4. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
5. Murach's beginning JAVA JDK 5, Murach, SPD
6. An Introduction to web Design and Programming –Wang-Thomson
7. Beginning Web Programming-Jon Duckett WROX.
8. Programming the World Wide Web – Robert W Sebesta. Pearson publications. Fourth edition.
9. Web Technologies. TCP/IP Architecture and Java programming- Godbole, Atul Kahate- 2nd ed, TMH
10. Web Technologies, A developer's Perspective, N P Gopalan, Akhilandeswari, PHI

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – II Sem.

COMPUTER NETWORKS AND UNIX LAB

PART – A

1. **I**mplement the data link layer framing methods such as 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 art each node using distance vector routing algorithm
5. Take an example subnet of hosts . Obtain broadcast tree for it.

PART – B

1. Write a shell script to generate a multiplication table.

2. Write a shell script that copies multiple files to a directory.

3. Write a shell script that counts the number of lines and words present in a given file.

4. Write a shell script that displays the list of all files in the given directory.

5. Write a shell script (small calculator) that adds, subtracts, multiplies and divides the given two integers. There are two division options: one returns the quotient and the other returns reminder. The script requires 3 arguments: The

operation to be used and two integer numbers. The options are add (-a), subtract (-s), multiply (-m), quotient (-c) and reminder (-r).

6.Write a shell script to reverse the rows and columns of a matrix.

7.Write a C program that counts the number of blanks in a text file.

a) Using standard I/O b) Using system calls.

8.Implement in C the following Unix commands using system calls.

a) cat b) ls c) mv

9.Write a program that takes one or more file/directory names as command line input and reports the following information on the file:

a) File type. b) Number of links. c) Time of last access. d)Read, Write and Execute permissions.

10.Write a C program that illustrates uses of the mkdir, opendir, readdir, closedir, and rmdir APIs.

11.Write a C program that illustrates how to execute two commands concurrently with a command pipe.

12.Write a C programs that illustrates the following:

a) Two-way communication with unidirectional pipes. b) Two-way communication with bidirectional pipes

13.Write a C program that illustrates the creation of child process using fork system call.

14.Write a C program that displays the real time of a day every 60 seconds.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – II Sem.

ADVANCED JAVA AND WEB TECHNOLOGIES LAB

Week-1:
Design the following static web pages required for an online book store web site.
1) **HOME PAGE:**
The static home page must contain three **frames**.

Top frame : Logo and the college name and links to Home page, Login page, Registration page, Catalogue page and Cart page (the description of these pages will be given below).

Left frame : At least four links for navigation, which will display the catalogue of respective links. For e.g.: When you click the link **"CSE"** the catalogue for **CSE** Books should be displayed in the Right frame.

Right frame: The *pages to the links in the left frame must be loaded here*. Initially this page contains description of the web site.

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

2) LOGIN PAGE:
This page looks like below:

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

3) CATOLOGUE PAGE:

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

1. Snap shot of Cover Page.
2. Author Name.
3. Publisher.
4. Price.
5. Add to cart button.

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

CSE ECE EEE CIVIL	**Book name**	**Price**	**Quantity**	**Amount**
	Java 2	$35.5	2	$70
	XML bible	$40.5	1	$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 of birth (3 select boxes)
7) Languages known (check boxes – English, Telugu, Hindi, Tamil)
8) Address (text area)

WEEK 3:

VALIDATION:

Write *JavaScript* to validate the following fields of the above registration page.

1. Name (Name should contains alphabets and the length should not be less than 6 characters).
2. Password (Password should not be less than 6 characters length).
3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)
4. Phone number (Phone number should contain 10 digits only).

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

Use PHP to connect with the database to store the above details.

Week-4:

Design a web page using **CSS** (**C**ascading **S**tyle **S**heets) which includes the following:

1) Use different font, styles:

In the style definition you define how each selector should work (font, color etc.).

Then, in the body of your pages, you refer to these selectors to activate the styles.

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 of the image with the background-repeat property.
As background-repeat: repeat
Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.

4) Define styles for links as

A:link
A:visited
A:active
A:hover

Example:
<style type="text/css">
A:link {text-decoration: none}
A:visited {text-decoration: none}
A:active {text-decoration: none}
A:hover {text-decoration: underline; color: red;}
</style>

5) Work with layers:
For example:
LAYER 1 ON TOP:
LAYER 1
<div style="position:relative; top:-50; left:5; color:red; font-size:80px; zindex:
1">LAYER 2
LAYER 2 ON TOP:
LAYER 1
<div style="position:relative; top:-50; left:5; color:red; font-size:80px; zindex:
4">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 of the book
2) Author Name
3) ISBN number
4) Publisher name
5) Edition
6) Price

Write a Document Type Definition (DTD) to validate the above XML file.

Display the XML file as follows.

The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns.

Use XML schemas XSL and CSS for the above purpose.

Note: Give at least for 4 books. It should be valid syntactically.

Hint: You can use some xml editors like XML-spy

Week-6:

VISUAL BEANS:

Create a simple visual bean with a area filled with a color.

The shape of the area depends on the property shape. If it is set to true then the shape of the area is Square and it is Circle, if it is false.

The color of the 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 TOMCAT web server and APACHE.

While installation assign port number 4040 to TOMCAT 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 servelet 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. Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters() method.

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).

Practice 'JDBC' connectivity.

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

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

Week-10:

Write a JSP which does the following job:

Insert the details of the 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)) of each 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 JDBC.

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 of localhost). This can be achieved through the use of sessions. 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 JSP pages to achieve the above mentioned functionality using sessions.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Computer Science and Engineering – II Sem.

INTELLECTUAL PROPERTY RIGHTS AND PATENTS – II

Unit 1 Intellectual Property Law Basics – Types of Intellectual Property – Agencies responsible for Intellectual Property Regristration - Cyber crime and E-commerce – International Aspects of Computer and Online Crime

Unit 2 Introduction to Patent Law – Rights and Limitations – Rights under Patent Law –Patent requirements - Ownership - Transfer - Patents Application Process – Patent Infringement - Patent Litigation - International Patent Law – Double Patenting – Patent Searching – Patent Law Treaty - New developments in Patent Law - Invention Developers and Promoters

Unit 3 Introduction to Transactional Law: Creating Wealth and Managing Risk – The Employment Relationship in the Internet and Tech Sector – Contact for the Internet and Tech Sector - Business Assets in Information Age – Symbol and Trademark – Trolls and Landmines and other Metaphors

Unit 4 Regulatory , Compliance and Liability Issues – State Privacy Law - Date Security – Privacy issues - Controlling Over use or Misuse of 1 Intellectual Property Rights

Books:

1. Deborah E.Bouchoux: "Intellectual Property". Cengage learning , New Delhi
2. Kompal Bansal & Parishit Bansal "Fundamentals of IPR for Engineers", BS Publications (Press)
3. Cyber Law. Texts & Cases, South-Western's Special Topics Collections
4. Prabhuddha Ganguli: ' Intellectual Property Rights" Tata Mc-Graw –Hill, New Delhi
5. Richard Stim: "Intellectual Property", Cengage Learning, New Delhi.
6. R.Radha Krishnan, S.Balasubramanian: "Intellectual Property Rights", Excel Books. New Delhi
7. M.Ashok Kumar and Mohd.Iqbal Ali: "Intellectual Property Right" Serials Pub.

w.e.f. 2010-2011 academic year

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA-533003, Andhra Pradesh (India)

COMPUTER SCIENCE AND ENGINEERING

COURSE STRUCTURE

IV B.Tech I Semester				
S.No	**Subject**	**P**	**C**	**Credits**
1	Cryptography and Network Security			4
2	UML & Design Patterns			4
3	Data Ware Housing and Data Mining			4
4	Mobile Computing			4
5	**Open Elective** i. MATLAB ii.Web Services iii. Open Source Software iv.Cyber Laws			4
6	**Elective –I:** i. Computer Forensics ii. Cloud Computing iii. Software Project Management iv. Machine Learning v. Distributed Databases			4
7	UML & Design Patterns Lab			2
8	Mobile Application Development Lab			2

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

CRYPTOGRAPHY AND NETWORK SECURITY

UNIT-I: Introduction: Security Attacks, Security Services, Security Mechanisms, and a Model for Network Security, Non-Cryptographic Protocol Vulnerabilities - DoS, DDoS, Session Hijacking and Spoofing, Software Vulnerabilities - Phishing, Buffer Overflow, Format String Attacks, SQL Injection, Basics of Cryptography - Symmetric Cipher Model, Substitution Techniques, Transportation Techniques, Other Cipher Properties - Confusion, Diffusion, Block and Stream Ciphers.

UNIT-II: Secret Key Cryptography: Data Encryption Standard(DES), Strength of DES, Block Cipher Design Principles and Modes of Operations, Triple DES, International Data Encryption algorithm, Blowfish, CAST-128, AES

UNIT-III Number Theory: Prime and Relatively Prime Numbers, Modular Arithmetic, Fermat's and Euler's Theorems, the Chinese Remainder Theorem, Discrete Logarithms.

UNIT-IV Public Key Cryptography: Principles of Public Key Cryptosystems, RSA Algorithm, Diffie-Hellman Key Exchange, Introduction to Elliptic Curve Cryptography.

UNIT-V: Cryptographic Hash Functions: Applications of Cryptographic Hash Functions, Secure Hash Algorithm, Message Authentication Codes - Message Authentication Requirements and Functions, HMAC, Digital signatures, Digital Signature Schemes, Authentication Protocols, Digital Signature Standards.

UNIT-VI: Authentication Applications: Kerberos, Key Management and Distribution, X.509 Directory Authentication service, Public Key Infrastructure, Electronic Mail Security: Pretty Good Privacy, S/MIME.

UNIT-VII: IP Security: Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining security Associations, Internet Key Exchange, Web Security: Web Security Considerations, Secure Sockets Layer and Transport Layer Security, Electronic Payment.

UNIT-VIII: System Security: Intruders, Intrusion Detection, Password Management, Malicious Software - Types, Viruses, Virus Countermeasures, Worms, Firewalls - Characteristics, Types of Firewalls, Placement of Firewalls, Firewall Configuration, Trusted systems.

Text Books:

1. Cryptography and Network Security: Principles and Practice, 5th Edition, William Stallings, Pearson Education, 2011.
2. Network Security and Cryptography, Bernard Menezes, Cengage Learning, 2011.

3. Cryptography and Network, 2nd Edition, Behrouz A. Fourouzan and Debdeep Mukhopadhyay, McGraw-Hill, 2010.

Reference Books:

1. Fundamentals of Network Security by Eric Maiwald (Dreamtech press)
2. Principles of Information Security, Whitman, Thomson.
3. Introduction to Cryptography, Buchmann, Springer.
4. Applied Cryptography, 2nd Edition, Bruce Schneier, Johnwiley & Sons.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

UML AND DESIGN PATTERNS

UNIT-1: Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle.

UNIT-II : Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams. Advanced classes, advanced relationships, Object diagrams : common modeling techniques.

UNIT-III : Behavioral Modeling: Interactions, Interaction diagrams. Use cases, Use case Diagrams, Activity Diagrams.,Events and signals, state machines, state chart diagrams.

UNIT-IV : Advanced Behavioral Modeling: Architectural Modeling: Components, Deployment, Component diagrams and Deployment diagrams, Common modeling techniques for component and deployment diagrams

UNIT-V : 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-VI: Creational Patterns : Abstract Factory, Builder, Factory Method, Prototype, Singleton,

UNIT-VII: Structural Patterns: Adapter, Bridge, Composite, Decorator, Façade, Flyweight, Proxy.

UNIT-VIII: Behavioral Patterns : Chain of Responsibility, Command, Interpreter, Iterator, Mediator, Memento, Observer, Strategy, Template Method, What to Expect from Design Patterns

Text Books:

1. The unified Modeling language user guide by Grady Booch, James Rumbaugh , Ivar Jacobson, PEA
2. Design Patterns By Erich Gamma, Pearson Education

Reference Books:

1. Satzinger: Object Oriented Analysis and Design, CENGAGE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

DATA WAREHOUSING AND DATA MINING

Unit I: Introduction to Data Mining: What is data mining, motivating challenges, origins of data mining, data mining tasks , Types of Data-attributes and measurements, types of data sets, Data Quality (Tan)

Unit II: Data preprocessing, Measures of Similarity and Dissimilarity: Basics, similarity and dissimilarity between simple attributes, dissimilarities between data objects, similarities between data objects, examples of proximity measures: similarity measures for binary data, Jaccard coefficient, Cosine similarity, Extended Jaccard coefficient, Correlation, Exploring Data : Data Set, Summary Statistics (Tan)

Unit III: Data Warehouse: basic concepts:, Data Warehousing Modeling: Data Cube and OLAP, Data Warehouse implementation : efficient data cube computation, partial materialization, indexing OLAP data, efficient processing of OLAP queries. (H & C)

Unit IV: Classification: Basic Concepts, General approach to solving a classification problem, Decision Tree induction: working of decision tree, building a decision tree, methods for expressing attribute test conditions, measures for selecting the best split, Algorithm for decision tree induction.

Model over fitting: Due to presence of noise, due to lack of representation samples, evaluating the performance of classifier: holdout method, random sub sampling, cross-validation, bootstrap. (Tan)

Unit V:

Classification-Alternative techniques: Bayesian Classifier: Bayes theorem, using bayes theorm for classification, Naïve Bayes classifier, Bayes error rate, Bayesian Belief Networks: Model representation, model building (Tan)

Unit VI:

Association Analysis: Problem Definition, Frequent Item-set generation- The Apriori principle , Frequent Item set generation in the Apriori algorithm, candidate generation and pruning, support counting (eluding support counting using a Hash tree) , Rule generation, compact representation of frequent item sets, FP-Growth Algorithms. (Tan)

Unit VII:

Overview- types of clustering, Basic K-means, K –means –additional issues, Bisecting k-means, k-means and different types of clusters, strengths and weaknesses, k-means as an optimization problem.

Unit VIII: Agglomerative Hierarchical clustering, basic agglomerative hierarchical clustering algorithm, specific techniques, DBSCAN: Traditional density: center-based approach, strengths and weaknesses (Tan)

Text Books:

1. Introduction to Data Mining : Pang-Ning tan, Michael Steinbach, Vipin Kumar, Pearson
2. Data Mining ,Concepts and Techniques, 3/e, Jiawei Han , Micheline Kamber , Elsevier

Reference Books:

1. Introduction to Data Mining with Case Studies 2nd ed: GK Gupta; PHI.
2. Data Mining : Introductory and Advanced Topics : Dunham, Sridhar, Pearson.
3. Data Warehousing, Data Mining & OLAP, Alex Berson, Stephen J Smith, TMH
4. Data Mining Theory and Practice, Soman, Diwakar, Ajay, PHI, 2006.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

MOBILE COMPUTING

UNIT I: Introduction: Mobility of bits and bytes, Wireless- The beginning, Mobile computing, Dialogue control, Networks, Middleware and Gateways, Application and Services, Developing mobile computing applications, Security in mobile computing, Standards- why are they necessary?, Standards bodies; Mobile computing architecture: Architecture for mobile computing, Three-tier architecture.

UNIT II: Emerging Techniques: Introduction, Bluetooth, Radio frequency identification (RFID) Wireless broadband (WIMAX); Global system for Mobile communications: Global system for mobile communications, GSM architecture, GSM entities, Call routing in GSM.

UNIT III: Short Message Service (SMS): Mobile computing over SMS, Short message service (SMS), Value added services through SMS; Wireless LAN: Introduction, Wireless LAN advantages, IEEE 802.11 standards, Wireless LAN architecture, Mobility in wireless LAN.

UNIT IV: Developing wireless LAN, Mobile adhoc networks and sensor networks, Wireless LAN security, Wireless access in vehicular environment, Wireless local loop, HiperLAN; Bluetooth enabled devices network: Bluetooth networks-Piconet and scatternet, WPAN synchronization; Layers in Bluetooth prtotocol: Physical layer, MAC layer, Bluetooth 3.0 and 4.0

UNIT V: Mobile IP Network layer: IP and Mobile IP network layers: OSI layer functions, TCP/IP and Internet protocol, Mobile internet protocol; Packet delivery and Handover Management; Location Management: Agent Discovery; Mobile TCP.

UNIT VI: Synchronization: Synchronization in mobile computing systems, Usage models for Synchronization in mobile application, Domain-dependant specific rules for data synchronization, Personal information manager, synchronization and conflict resolution strategies, synchronizer; Mobile agent: mobile agent design, aglets; Application Server.

UNIT VII: Introduction to Mobile Adhoc network: fixed infrastructure architecture, MANET infrastructure architecture; MANET: properties, spectrum, applications; Security in Ad-hoc network; Wireless sensor networks; sensor network applications.

UNIT VIII: Wireless application protocol (WAP): WAP1.1 architecture, wireless datagram protocol (WDP), wireless transport layer security (wtls), wireless transaction and session layers, wireless application environment; Wireless LAN, 802.11 architecture and protocol layers: Wireless networking and wireless LAN, WLAN architecture, IEEE802.11, protocol layers, physical layer 802.11z

Text Book:

1. ASOKE K TALUKDER, HASAN AHMED, ROOPA R YAVAGAL, "Mobile Computing, Technology Applications and Service Creation" Second Edition, Mc Graw Hill. (Unit-1, Unit-2, Unit-3, Unit-4)
2. RAJ KAMAL, "Mobile Computing," second edition, Oxford. (Unit-5, Unit-6, Unit-7, Unit-8)

REFERENCE BOOKS:

1. UWE Hansmann, Lother Merk, Martin S. Nocklous, Thomas Stober, "Principles of Mobile Computing," Second Edition, Springer.
2. Jochen Schiller, "Mobile Communications," second edition, Pearson

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

MATLAB

UNIT I Introduction:What is MATLAB, Basics of MATLAB, MATLAB windows, on-line help, input-output, file types.

UNIT II MATLAB Basics: A Minimum MATLAB Session, Creating and Working with Arrays of Numbers, Creating and Printing Simple Plots, Creating, Saving, and Executing a Script File, Creating and Executing a Function File.

UNIT III Arrays and matrices: Matrices and Vectors, Input, Indexing, Matrix manipulation, Creating vectors, Matrix and Array Operations, Arithmetic operations, Relational operations, Logical operations, Elementary math functions, Matrix functions.

UNIT IV Programming basics: Relational and logical operators, if-end structure, if-else-end structure, if-elseif-else-end structure, switch-case statement, for-end loop, while-end loop, break and continue commands.

UNIT V Scripts and Functions: Script Files , Function Files, Executing a function, Subfunctions, Nested functions.

UNIT VI Graphics: Basic 2-D Plots, Style options, Labels, title, legend, and other text objects, Modifying plots with the plot editor, 3-D Plots, Mesh and surface plots.

UNIT VII Handle graphics: The object hierarchy, Object handles, Object properties, modifying an existing plot.

UNIT VIII Graphical user interface (GUI): how a GUI works, creating and displaying a GUI.

Text Books:

1. Getting started with MATLAB by Rudra Pratap,Nov 2009. PHI
2. Programming in MATLAB for Engineers by Stephen J.Chapman, Cengage Learning.

REFERENCE:

1. MATLAB: An introduction with applications by Amos Gilat, Wiley Student edition.
2. MATLAB for Engineering Explained, Gusfafsson, Fredrik, Bergmam, Niclas

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

WEB SERVICES

UNIT I : Evolution and Emergence of Web Services - Evolution of distributed computing, Core distributed computing technologies – client/server, CORBA, JAVA RMI, Micro Soft DCOM, MOM, Challenges in Distributed Computing, role of J2EE and XML in distributed computing, emergence of Web Services and Service Oriented Architecture (SOA).

UNIT II : Introduction to Web Services – The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits and challenges of using web services.

UNIT III: Web Services Architecture – Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication, basic steps of implementing web services, developing web services enabled applications.

UNIT IV : Describing Web Services – WSDL – WSDL in the world of Web Services, Web Services life cycle, anatomy of WSDL definition document, WSDL bindings, WSDL Tools, limitations of WSDL.

UNIT V : Core fundamentals of SOAP – SOAP Message Structure, SOAP encoding , SOAP message exchange models, SOAP communication and messaging, SOAP security.

Developing Web Services using SOAP – Building SOAP Web Services, developing SOAP Web Services using Java, limitations of SOAP.

UNIT VI: Discovering Web Services – Service discovery, role of service discovery in a SOA, service discovery mechanisms, UDDI – UDDI Registries, uses of UDDI Registry, Programming with UDDI, UDDI data structures, support for categorization in UDDI Registries, Publishing API, Publishing information to a UDDI Registry, searching information in a UDDI Registry, deleting information in a UDDI Registry, limitations of UDDI.

UNIT VII: Web Services Interoperability – Means of ensuring Interoperability, Overview of .NET and J2EE.

UNIT VIII : Web Services Security – XML security frame work, XML encryption, XML digital signature, XKMS structure, guidelines for signing XML documents.

Text Books:

1. Developing Java Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, Wiley India.
2. Java Web Services Architectures, Mc Goven , Tyagi, Stevens, Mathew, Elsevier
3. XML, Web Services, and the Data Revolution, F.P.Coyle, Pearson Education.
4. Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education.

Reference Books:

1. Building Web Services with Java, 2nd Edition, S. Graham and others, Pearson Education.
2. Java Web Services, D.A. Chappell & T. Jewell, O'Reilly,SPD.
3. McGovern, et al., "Java Web Services Architecture", Morgan Kaufmann Publishers,2005.
4. J2EE Web Services, Richard Monson-Haefel, Pearson Education.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

OPEN SOURCE SOFTWARE

UNIT I: INTRODUCTION : Introduction to Open sources – Need of Open Sources – Advantages of Open Sources– Application of Open Sources. Open source operating systems: LINUX: Introduction – General Overview – Kernel Mode and user mode

UNIT II: LINUX:Process – Advanced Concepts – Scheduling – Personalities – Cloning – Signals – Development with Linux.

UNIT III : OPEN SOURCE DATABASE : MySQL: Introduction – Setting up account – Starting, terminating and writing your own SQL programs – Record selection Technology – Working with strings – Date and Time– Sorting Query Results – Generating Summary – Working with metadata – Usings equences – MySQL and Web.

UNIT IV: OPEN SOURCE PROGRAMMING LANGUAGES : PHP: Introduction – Programming in web environment – variables – constants – data types – operators – Statements – Functions – Arrays – OOP – String Manipulation and regular expression – File handling and data storage

UNIT V: PHP and SQL database –PHP and LDAP – PHP Connectivity – Sending and receiving E-mails – Debugging and error handling – Security – Templates.

UNIT VI: PYTHON : Syntax and Style – Python Objects – Numbers – Sequences – Strings – Lists and Tuples – Dictionaries – Conditionals and Loops

UNIT VII: Files – Input and Output – Errors and Exceptions – Functions – Modules – Classes and OOP – Execution Environment.

UNIT VIII: PERL : Perl backgrounder – Perl overview – Perl parsing rules – Variables and Data – Statements and Control structures – Subroutines, Packages, and Modules- Working with Files –Data Manipulation.

Text Books:

1. Remy Card, Eric Dumas and Frank Mevel, "The Linux Kernel Book", Wiley Publications, 2003

2. Steve Suchring, "MySQL Bible", John Wiley, 2002

References:

1. Rasmus Lerdorf and Levin Tatroe, "Programming PHP", O'Reilly, 2002

2. Wesley J. Chun, "Core Phython Programming", Prentice Hall, 2001

3. Martin C. Brown, "Perl: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.

4. Steven Holzner, "PHP: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.

5. Vikram Vaswani, "MYSQL: The Complete Reference", 2nd Edition, Tata McGraw -Hill Publishing Company Limited, Indian Reprint 2009.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

CYBER LAWS (Open Elective-IV)

UNIT I: The IT Act, 2000: A Critique: Crimes in this Millennium, Section 80 of the IT Act, 2000 – A Weapon or a Farce?, Forgetting the Line between Cognizable and Non- Cognizable Officers, Arrest for "About to Commit" an Offence Under the IT Act, A Tribute to Darco, Arrest, But No Punishment.

UNIT II : Cyber Crime and Criminal Justice: Penalties, Adjudication and Appeals Under the IT Act, 2000: Concept of Cyber Crime and the IT Act, 2000, Hacking, Teenage Web Vandals, Cyber fraud and Cyber Cheating, Virus on Internet Deformation, Harassment and E-mail Abuse

UNIT III : Cyber Pornography, Other IT Offences, Monetary Penalties, Adjudication and Appeals Under IT Act 2000, Network Service Providers, Jurisdiction and Cyber Crimes, Nature of Cyber Criminality Strategies to Tackle Cyber Crime and Trends, Criminal Justice in India and Implications.

UNIT IV : Digital Signatures, Certifying Authorities and E-Governance: Digital Signatures, Digital Signature Certificate, Certifying Authorities and Liability in the Event of Digital Signature compromise, E-Governance in the India. A Warming to Babudom, Are Cyber Consumers Covered under the Consumer Protection, Goods and Services, Consumer Complaint Defect in Goods and Deficiency in Services Restrictive and Unfair Trade Practices

UNIT V : Traditional Computer Crime: Early Hacker and Theft of Components

Traditional problems, Recognizing and Defining Computer Crime, Phreakers: Yesterday's Hackers, Hacking, Computers as Commodities, Theft of intellectual Property

UNIT VI : Web Based Criminal Activity, Interference with Lawful Use of Computers, Malware, DoS (Denial of Service) and DDoS (Distributed Denial of Service) Attacks, Spam , Ransomware and Kidnapping of Information, Theft of Information, Data Manipulation, and Web Encroachment , Dissemination of Contraband or Offensive materials, Online Gambling Online Fraud, Securities Fraud and stock Manipulation, Ancillary crimes

UNIT VII : IDEBTITY THEFT AND IDENTITY FRAUD: Typologies of Internet Theft/Fraud, Prevalence and Victimology, Physical Methods of Identity Theft, Virtual and Internet Facilitated methods, Crimes facilitated by Identity theft/fraud, Organized Crime and Technology

UNIT VIII : Protection of Cyber consumers in India Cyber-consumer act Consumer, Goods and service, consumer compliant, restricted and unfair trade practices

Textbooks:

1. Vivek Sood, " Cyber Law Simplefied", Tata McGraw Hill
2. Marjie T. Britz, " Computer Forensics and Cyber Crime", Pearson.
3. Cyber Laws Texts and Cases, Ferrera, CENGAGE

IV Year B. Tech. Computer Science and Engineering – I Sem.

COMPUTER FORENSICS

Unit I : Computer Forensics and Investigations: Understanding Computer Forensics, Preparing for Computer Investigations, Taking A Systematic Approach, Procedure for Corporate High-Tech Investigations, Understanding Data Recovery Workstations and Software,

Unit II: Investor's Office and Laboratory: Understanding Forensics Lab Certification Requirements, Determining the Physical Requirements for a Computer Forensics Lab, Selecting a Basic Forensic Workstation

Unit III: Data Acquisition: Understanding Storage Formats for Digital Evidence, Determining the Best Acquisition Method, Contingency Planning for Image Acquisitions, Using Acquisition Tools, Validating Data Acquisition, Performing RAID Data Acquisition, Using Remote Network Acquisition Tools, Using Other Forensics Acquisition Tools

Unit IV: Processing Crime and Incident Scenes: Identifying Digital Evidence, Collecting the Evidence in Private-Sector Incident Scenes, Processing law Enforcement Crime Scenes, Preparing for a Search, Securing a Computer Incident or Crime Scene, Sizing Digital evidence at the Scene, Storing Digital evidence, obtaining a Digital Hash.

Unit V: Current Computer Forensics Tools: Evaluating Computer Forensics Toll Needs, Computer Forensics Software Tools, Computer Forensics Hardware Tools, Validating and Testing Forensics Software

Unit VI: Computer Forensics Analysis and Validation: Determining What Data to Collect and Anlyze, Validating Forensic Data, Addressing Data-Hiding Techniques, Performing Remote Acquisition

Unit VII: Recovering Graphics and Network Forensics: Recognizing a Graphics File, Understanding Data Compression, Locating and Recovering Graphics Files, Understanding Copyright Issues with Graphics, Network Forensic, Developing Standard Procedure for Network Forensics, Using Network Tools, Examining Hiney Project

Unit VIII: E-mail Investigations Cell Phone and Mobile Device Forensics: Exploring the Role of E-mail in Investigations, Exploring the Role of Client and Server in E-mail, Investigating E-mail Crimes and Violations, Understanding E-mail Servers, Using Specialized E-mail Forensics Tools, Understanding Mobile Device Forensics, Understanding Acquisition Procedure for Cell Phones and Mobile Devoices

Textbooks:

1. Nelson, Phillips Enfinger,Steuart, " Computer Forensics and Investigations, Cengage Learning.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

CLOUD COMPUTING

UNIT – I: Introduction to virtualization and virtual machine, Virtualization in Cluster /grid context Virtual network, Information model & data model for virtual machine, Software as a Service (SaaS), SOA, On Demand Computing.

UNIT – II: Cloud computing: Introduction, What it is and What it isn't, from Collaborations to Cloud, Cloud application architectures, Value of cloud computing, Cloud Infrastructure models, Scaling a Cloud Infrastructure, Capacity Planning, Cloud Scale.

UNIT – III: Data Center to Cloud: Move into the Cloud, Know Your Software Licenses, The Shift to a Cloud Cost Model, Service Levels for Cloud Applications

UNIT IV: Security: Disaster Recovery, Web Application Design, Machine Image Design, Privacy Design, Database Management, Data Security, Network Security, Host Security, Compromise Response

UNIT – V : Defining Clouds for the Enterprise- Storage-as-a-Service, Database-as-a-Service, Information-as-a-Service, Process-as-a-Service, Application-as-a-Service,

UNIT VI: Platform-as-a-Service, Integration-as-a-Service, Security-as-a-Service, Management/Governance-as-a-Service, Testing-as-a-Service Infrastructure-as-a-Service

UNIT – VII: Disaster Recovery, Disaster Recovery, Planning, Cloud Disaster Management

UNIT VIII: Case study: Types of Clouds, Cloudcentres in detail, Comparing approaches, Xen OpenNEbula , Eucalyptus, Amazon, Nimbus

Text Books:

1. Cloud Computing – Web Based Applications That Change the way you Work and Collaborate Online – **Michael Miller**, Pearson Education.
2. Cloud Application Architectures, 1st Edition by **George Reese** O'Reilly Media.

Reference Book:

1. Cloud Computing and SOA Convergence in Your Enterprise: A Step-by-Step Guide **David S. Linthicum** Addison-Wesley Professional

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

SOFTWARE PROJECT MANAGEMENT

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.

UNIT – IV : Model based software architectures : A Management perspective and technical perspective.

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

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

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

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

Process Automation : Automation Building blocks, The Project Environment.

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

Tailoring the Process : Process discriminants.

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

TEXT BOOK :

1. Software Project Management, Walker Royce: Pearson Education, 2005.

REFERENCES :

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw-Hill Edition.
2. Software Project Management, Joel Henry, Pearson Education.
3. Software Project Management in practice, Pankaj Jalote, Pearson

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

MACHINE LEARNING

UNIT I: Introduction: Well-posed learning problems, designing a learning system, Perspectives and issues in machine learning.

UNIT II: Concept Learning: Concept learning and the general to specific ordering, Introduction, A concept learning task, Concept learning as search, Find-S: finding a maximally specific hypothesis, Version spaces and the candidate elimination algorithm, Remarks on version spaces and candidate elimination, Inductive bias.

UNIT III: Decision Tree learning: Decision tree representation, Appropriate problems for decision tree learning, The basic decision tree learning algorithm, Hypothesis space search in decision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning

UNIT IV: Bayesian learning: Bayes theorem, Bayes theorem and concept learning, Maximum likelihood and least squared error hypotheses, Maximum likelihood hypotheses for predicting probabilities, Bayes optimal classifier, Naïve bayes classifier, An example learning to classify text, Bayesian belief networks.

UNIT V: Computational learning theory-1: Probability learning an approximately correct hypothesis, Sample complexity for Finite Hypothesis Space, Sample Complexity for infinite Hypothesis Spaces, The mistake bound model of learning - Instance-Based Learning- Introduction.

UNIT VI: Computational learning theory-2: k -Nearest Neighbor Learning, Locally Weighted Regression, Radial Basis Functions, Case-Based Reasoning, Remarks on Lazy and Eager Learning

UNIT VII: Learning Sets of Rules: Introduction, Sequential Covering Algorithms, Learning Rule Sets: Summary, Learning First Order Rules, Learning Sets of First Order Rules: FOIL, Induction as Inverted Deduction, Inverting Resolution

UNIT VIII: Analytical Learning: Learning with Perfect Domain Theories: Prolog-EBG Remarks on Explanation-Based Learning, Explanation-Based Learning of Search Control Knowledge

TEXT BOOK:

1. Machine Learning, Tom M. Mitchell, MGH

REFERENCE BOOKS:

1. Introduction to machine learning, 2nd ed, Ethem Alpaydin, PHI

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

DISTRIBUTED DATABASES

UNIT – I : Features of Distributed versus Centralized Databases, Principles Of Distributed Databases , Levels Of Distribution Transparency, Reference Architecture for Distributed Databases , Types of Data Fragmentation, Integrity Constraints in Distributed Databases.

UNIT – II : Translation of Global Queries to Fragment Queries, Equivalence Transformations for Queries, Transforming Global Queries into Fragment Queries, Distributed Grouping and Aggregate Function Evaluation, Parametric Queries.

UNIT – III : Optimization of Access Strategies, A Framework for Query Optimization, Join Queries, General Queries.

UNIT – IV: The Management of Distributed Transactions, A Framework for Transaction Management , Supporting Atomicity of Distributed Transactions, Concurrency Control for Distributed Transactions, Architectural Aspects of Distributed Transactions.

UNIT – V : Concurrency Control, Foundation of Distributed Concurrency Control, Distributed Deadlocks, Concurrency Control based on Timestamps, Optimistic Methods for Distributed Concurrency Control.

UNIT – VI: Reliability, Basic Concepts, Nonblocking Commitment Protocols, Reliability and concurrency Control, Determining a Consistent View of the Network, Detection and Resolution of Inconsistency, Checkpoints and Cold Restart, Distributed Database Administration, Catalog Management in Distributed Databases, Authorization and Protection

UNIT – VII: Architectural Issues, Alternative Client/Server Architectures, Cache Consistency Object Management, Object Identifier Management, Pointer Swizzling, Object Migration, Distributed Object Storage, Object Query Processing, Object Query Processor Architectures, Query Processing Issues, Query Execution , Transaction Management, Transaction Management in Object DBMSs , Transactions as Objects.

UNIT – VIII : Database Integration, Scheme Translation, Scheme Integration, Query Processing Query Processing Layers in Distributed Multi-DBMSs, Query Optimization Issues. Transaction Management Transaction and Computation Model Multidatabase Concurrency Control, Multidatabase Recovery, Object Orientation And Interoperability Object Management Architecture CORBA and Database Interoperability Distributed Component Model COM/OLE and Database Interoperability, PUSH-Based Technologies

TEXT BOOKS :

1. Distributed Database Principles & Systems, Stefano Ceri, Giuseppe Pelagatti McGraw-Hill

REFERENCES:

1. Principles of Distributed Database Systems, M.Tamer Ozsu, Patrick Valduriez – Pearson Education.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – I Sem.

UML & DESIGN PATTERNS LAB

1. To create a UML diagram of ATM APPLICATION.
2. To create a UML diagram of LIBRARY MANAGEMENT SYSTEM.
3. To create a UML diagram of ONLINE BOOK SHOP
4. To create a UML diagram of RAILWAY RESERVATION SYSTEM
5. To create a UML diagram for BANKING SYSTEM
6. To design a Document Editor
7. Using UML design Abstract factory design pattern

8. Using UML design Builder Design pattern

9. Using UML design Facade Design pattern

10. Using UML design Bridge Design pattern

11. Using UML design Decorator Design pattern

12. User gives a print command from a word document. Design to represent this chain of responsibility design pattern

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IV Year B. Tech. Computer Science and Engineering – I Sem.

MOBILE APPLICATION DEVELOPMENT LAB

1. Write a J2ME program to show how to change the font size and colour.

2. Write a J2ME program which creates the following kind of menu.

    * cut

    * copy

    * past

    * delete

    * select all

    * unselect all

3. Create a J2ME menu which has the following options (Event Handling):

- 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. 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.

5. Create an MIDP application which examine, that a phone number, which a user has entered is in the given format (Input checking):

* Area code should be one of the following: 040, 041, 050, 0400, 044

* There should 6-8 numbers in telephone number (+ area code)

6. 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. Show how to make a SOCKET connection from the phone to port 80.

7. 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.

8. 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 Student into Batches and suggest them to design database according to their

domains and render information according the requests.

9. Write an Android application program that displays Hello World using Terminal.

10. Write an Android application program that displays Hello World using Eclipse.

11. Write an Android application program that accepts a name from the user and displays the hello name to the user in response as output using Eclipse.

12. Write an Android application program that demonstrates the following:

(i) LinearLayout

(ii) RelativeLayout

(iii) TableLayout

(iv) GridView layout

13. Write an Android application program that converts the temperature in Celsius to Fahrenheit.

14. Write an Android application program that demonstrates intent in mobile application development.

w.e.f. 2010-2011 academic year

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA-533003, Andhra Pradesh (India)

COMPUTER SCIENCE AND ENGINEERING

COURSE STRUCTURE

IV B.Tech II Semester				
S.No	**Subject**	**P**	**C**	**Credits**
1	**Elective –II** i) Human Computer Interaction ii) Advanced Operating Systems			4

	iii) Mobile Adhoc & Sensor Networks iv)Pattern Recognition v) Digital Image Processing			
2	**Elective –III** i) Embedded and Real Time Systems ii) Simulation and Modeling iii)Information Retrieval Systems iv) Artificial Intelligence v) Multimedia & Application Development			4
3	**Elective –IV** i) Software Testing Methodologies ii) Neural Networks & Soft Computing iii)Social Networks and the Semantic Web iv) Parallel Computing v) E- Commerce			4
4	Distributed Systems			4
5	Project			12

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – II Sem.

HUMAN COMPUTER INTERACTION

UNIT I: Introduction: Importance of user Interface, definition, importance of good design. Benefits of good design. A brief history of Screen design

UNIT II: The graphical user interface: Popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user –interface popularity, characteristics- Principles of user interface.

UNIT III: Design process: Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business junctions.

UNIT IV: Screen Designing : Design goals, Screen planning and purpose, organizing screen elements, ordering of screen data and content, screen navigation and flow, Visually pleasing composition, amount of information, focus and emphasis, presentation information simply and meaningfully, information retrieval on web, statistical graphics, Technological consideration in interface design.

UNIT V: Windows: Windows new and Navigation schemes selection of window, selection of devices based and screen based controls.

UNIT VI: Components : Components text and messages, Icons and increases, Multimedia, colors, uses problems, choosing colors.

UNIT VII: Software tools : Specification methods, interface, Building Tools.

UNIT VIII: Interaction Devices: Keyboard and function keys, pointing devices, speech recognition digitization and generation, image and video displays, drivers.

TEXT BOOKS :

1. Human Computer Interaction. 3/e, Alan Dix, Janet Finlay, Goryd, Abowd, Russell Beal, PEA,2004.
2. The Essential guide to user interface design,2/e, Wilbert O Galitz, Wiley DreamaTech.

REFERENCE BOOKS :

3. Human Computer, Interaction Dan R.Olsan, Cengage ,2010.
4. Designing the user interface. 4/e, Ben Shneidermann , PEA.
5. User Interface Design, Soren Lauesen , PEA.
6. Interaction Design PRECE, ROGERS, SHARPS, Wiley .

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – II Sem.

ADVANCED OPERATING SYSTEMS

UNIT – I: Computer System and Operating System Overview: Overview of Computer System hardware – Instruction execution – I/O function – Interrupts – Memory hierarchy – I.O Communication techniques. Operating System Objectives and functions – Evaluation of operating System – Example Systems.

UNIT – II: Introduction to Distributed systems : Goals of distributed system, hardware and software concepts, design issues.

Communication in Distributed systems : Layered protocols, ATM networks , the Client - Server model, remote procedure call and group communication.

UNIT-III: Synchronization in Distributed systems : Clock synchronization, Mutual exclusion, E-tech algorithms, the Bully algorithm, a ring algorithm, atomic transactions,

UNIT – IV: Deadlocks: deadlock in distributed systems, Distributed deadlock prevention, and distributed dead lock detection.

UNIT-V: Processes: *Processes and Processors in distributed systems : Threads, system models, Processor allocation, Scheduling in distributed system, Fault tolerance and real time distributed systems.*

UNIT-VI: Distributed file systems : *Distributed file systems design, distributed file system implementation, trends in distributed file systems.*

UNIT – VII: Distributed shared memory : What is shared memory, consistency models, page based distributed shared memory, shared variable distributed shared memory, object based DSM.

UNIT-VIII: Case study MACH : Introduction to MACH, process management in MACH, memory management in MACH, communication in MACH, UNIX emulation in MACH. Case study DCE : Introduction to DCE threads, RPC's, Time service, Directory service, security service, Distributed file system.

Text Books :

1. Distributed Operating System - Andrew. S. Tanenbaum, PHI
2. Operating Systems' – Internal and Design Principles Stallings, Fifth Edition–2005, Pearson education/PHI

Reference:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – II Sem.

MOBILE ADHOC & SENSOR NETWORKS

UNIT-I: Introduction to Ad Hoc Wireless Networks

Cellular and Ad Hoc Wireless Networks, Characteristics of MANETs, Applications of MANETs, Issues and Challenges of MANETs.

UNIT-II: Routing in MANETs

Classification of Routing Protocols, Topology-based versus Position-based Approaches, Topology based Routing Protocols, Position based Routing, Other Routing Protocols.

UNIT-III: Data Transmission in MANETs

The Broadcast Storm, Multicasting, Geocasting, TCP over Ad Hoc Networks-TCP Protocol overview, TCP and MANETs, Solutions for TCP over Ad Hoc

UNIT-IV: Security in MANETs

Security in Ad Hoc Wireless Networks, Key Management, Secure Routing, Cooperation in MANETs, Intrusion Detection Systems.

UNIT-V: Basics of Wireless Sensors and Applications

The Mica Mote, Sensing and Communication Range, Design Issues, Energy consumption, Clustering of Sensors, Applications

UNIT-VI: Data Retrieval in Sensor Networks

Classification of WSNs, MAC Layer, Routing Layer, High-Level Application Layer Support, Adapting to the Inherent Dynamic Nature of WSNs.

UNIT-VII: Sensor Network Platforms and Tools

Sensor Node Hardware, Sensor Network Programming Challenges, Node-Level Software Platforms, Node-Level Simulators,

UNIT-VIII: Security in WSNs

Security in Wireless Sensor Networks, Key Management in Wireless Sensor Networks, Secure Data Aggregation in Wireless Sensor Networks, Introduction to Vehicular Ad Hoc Networks, Introduction to Wireless Mesh Networks

TEXT BOOKS:

1. Ad Hoc and Sensor Networks: Theory and Applications, Carlos de Morais Cordeiro and Dharma Prakash Agrawal, World Scientific Publications / Cambridge University Press, 2006.
2. Wireless Sensor Networks: An Information Processing Approach, Feng Zhao, Leonidas Guibas, Elsevier Science Imprint, Morgan Kauffman Publishers, 2005.

REFERENCE BOOKS:

1. Ad Hoc Wireless Networks: Architectures and Protocols, C. Siva Ram Murthy and B. S. Manoj, Pearson Education, 2004.
2. Guide to Wireless Ad Hoc Networks, Sudip Misra, Isaac Woungang, and Subhas Chandra Misra, Springer International Edition, 2011.
3. Guide to Wireless Sensor Networks, Sudip Misra, Isaac Woungang, and Subhas Chandra Misra, Springer International Edition, 2012.
4. Wireless Mesh Networking, Thomas Krag and Sebastin Buettrich, O'Reilly Publishers, 2007.
5. Wireless Sensor Networks – Principles and Practice, Fei Hu, Xiaojun Cao, An Auerbach book, CRC Press, Taylor & Francis Group, 2010.
6. Wireless Ad hoc Mobile Wireless Networks-Principles, Protocols and Applications, Subir Kumar Sarkar, et al., Auerbach Publications, Taylor & Francis Group, 2008.
7. Wireless Ad hoc Networking, Shih-Lin Wu, Yu-Chee Tseng, Auerbach Publications, Taylor & Francis Group, 2007
8. Wireless Ad hoc and Sensor Networks – Protocols, Performance and Control, Jagannathan Sarangapani, CRC Press, Taylor & Francis Group, 2007, rp 2010.
9. Security in Ad hoc and Sensor Networks, Raheem Beyah, et al., World Scientific Publications / Cambridge University Press, 2010

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – II Sem.

PATTERN RECOGNITION

UNIT-I : Introduction: Is Pattern Recognition Important; features, feature vectors, and classifiers; supervised, unsupervised and semi supervised learning; Matlab programs.

UNIT-II : Classifiers based on Bayes Decision Theory: Introduction, Bayes Decision Theory; discriminant functions and decision surfaces; Bayesian classification for normal distributions- the Gaussian probability density function, the Bayesian classifier for normally distributed classes;

UNIT-III : Linear & Non linear Classifiers: Introduction; linear discriminant functions and decision hyper planes, the perceptron algorithm, Nonlinear Classifiers: introduction, the xor problem, the two-layer perception-classification capabilities of the two-layer perceptron; three-layer perception.

UNIT-IV : Feature Selection: Introduction, Preprocessing- outlier removal, data normalization, missing data; the peaking phenomenon; class separability measures- divergence, chernoff bound and Bhattacharya distance, scatter matrices.

UNIT-V : Supervised Learning: introduction, error-counting approach, exploiting the finite size of the data set; a case study from medical imaging; semi supervised learning- generative models, graph-based methods, transductive support vector machines.

Unit-VI : Skin based Pattern Extraction And Recognition -Introduction, Neural color Constancy based skin detection, Image segmentation, Local region graph Pattern, Skin region Synthesis pattern, Matching multiple regions with Local Global Graph Method.

UNIT-VII : Spatio Temporal Patterns - Measuring similarity patterns-Introduction-Spatio-temporal data collection, representation,. data summarization, Querying Indexing and Clustering of moving object Patterns and trajectories, group patterns mining, mobile patterns, Predicting, similarity measures, l data generation, Trajectory representation, Defining a new similarity measure, Clustering trajectories with K-means algorithm, Incremental approach for clustering.

UNIT-VIII : Graph-based methods Introduction, Hyper graph matching and Algorithms, Parquet graphs-similarity function, Local Feature Detectors.

Text Book(s)

1. Sergios Theodoridis, Konstantinos Koutroumbas, "Pattern Recognition" Fourth Edition, (Unit I –V) Elsevier

2. Horst Bunke, Abrahmkadel, MarksLast, "Applied Pattern Recognition" 2008 Springer –Verlag Berlin Heidelberg.(Unit VI-VIII)

Reference Book(s)

1. "Pattern Recognition", Devi & Murthy, Universities Press
2. "Pattern Recognition and Image Analysis", Gose, Johnsonbaugh, Jost, PHI
3. Rajjan Shinghal, "Pattern Recognition Techniques and Applications" Oxford University Press.
4. Pattern Classification, 2nd ed, Richard O Duda
5. Applied Pattern recognition, Horst Bunku, Abraham Kandel

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – II Sem.

DIGITAL IMAGE PROCESSING

UNIT-I: DIGITAL IMAGE FUNDAMENTALS: Image Sensing and Acquisition, Image Sampling & quantization, some basic Relationships between pixels. Mathematical tools used in digital image processing – array Vs matrix operations, linear Vs non linear operations, arithmetic operations, set and logical operations, spatial operations, vector and matrix operations, Probabilistic methods.

UNIT-II: IMAGE TRANSFORMS: 2D-DFT and properties, Walsh Transform, Hadamard Transform, Discrete cosine Transform, Haar-Transform, Slant Transform, KL transform, comparison of different image transforms.

UNIT-III : IMAGE ENHANCEMENT IN THE SPATIAL DOMAIN: Basic Intensity transformations functions, histogram Processing, fundamentals of Spatial Filtering, Smoothing Spatial filters, Sharpening spatial filters, Combining spatial enhancement methods.

UNIT-IV: IMAGE ENHANCEMENT IN FREQUENCY DOMAIN: Basics of filtering in frequency domain, additional characteristics of the frequency domain, correspondence between filtering in the spatial and frequency domains. Image smoothing using frequency domain filters, image sharpening using frequency domain filters – Gaussian High pass filters, Laplacian in the frequency domain, Homomorphic filtering.

UNIT-V: IMAGE DEGRADATION / RESTORATION:

Noise models, Restoration in the presence of Noise only-spatial filtering, - mean, order- statistic and adaptive filters, Estimating the Degradation function, Inverse filtering, Weiner filtering, Constrained Least squares filtering.

UNIT-VI : IMAGE SEGMENTATION:

Point, line and edge Detection, Thresholding, Region based segmentation, the use of motion in segmentation.

UNIT-VII IMAGE COMPRESSION: Need for Image compression, Classification of Redundancy in Images, Image compression models, Classification of image compression schemes, Run length coding, arithmetic coding, Block truncation coding, Dictionary based compression, transform based compression, Image compression standards, Scalar quantization, vector quantization.

UNIT-VIII : COLOR IMAGE PROCESSING: Color models, pseudo color image processing, color transformations, Smoothing and sharpening, image segmentation based on color.

TEXT BOOKS:

1. Digital Image processing– S jayaraman, S Esakkirajan, T Veerakumar, Tata McGraw Hill.
2. Digital Image Processing-R. C .Gonzalez & R.E. Woods, Addison Wesley/Pearson education, 3rd Edition, 2010.
3. Digital Image Processing and Computer Vision, Sonka, CENGAGE

REFERENCES:

1. Digital Image processing using MATLAB-Rafael C. Gonzalez, Richard E woods and Steven L.Eddins, Tata McGraw Hill, 2010.
2. Fundamentals of Digital Image processing-A .K. Jain, PHI.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – II Sem.

EMBEDDED AND REAL TIME SYSTEMS

Unit I: Introduction to Embedded systems: What is an embedded system Vs. General computing system, history, classification, major application areas, and purpose of embedded systems. Core of embedded system, memory, sensors and actuators, communication interface, embedded firmware, other system components, PCB and passive components.

UNIT II: 8—bit microcontrollers architecture: Characteristics, quality attributes application specific, domain specific, embedded systems. Factors to be considered in selecting a controller, 8051 architecture, memory organization, registers, oscillator unit, ports, source current, sinking current, design examples.

UNIT III: Interrupt, timers and serial ports of 8051: 8051 interrupts, interfacing ADC 0801, Timers, serial port, reset circuit, power saving modes.

UNIT IV: Programming the 8051Micro controller: Addressing modes, Instruction set, sata transfer instructions, Arithmetic Instructions, Logical Instructions, Arithmetic Instructions, logical instructions, Boolean, Program control transfer instructions.

UNIT V: RTOS and Scheduling, Operating basics, types, RTOS, tasks, process and threads, multiprocessing and multitasking, types of multitasking, non preemptive, preemptive scheduling.

UNIT VI: Task communication of RTOS, Shared memory, pipes, memory mapped objects, message passing, message queue, mailbox, signaling, RPC and sockets, task communication/synchronization issues, racing, deadlock, live lock, the dining philosopher's problem.

UNIT VII: The producer-consumer problem, Reader writers problem, Priority Inversion, Priority ceiling, Task Synchronization techniques, busy waiting, sleep and wakery, semaphore, mutex, critical section objects, events, device, device drivers, how to clause an RTOS, Integration and testing of embedded hardware and fire ware.

UNIT VIII: Simulators, emulators, Debuggers, Embedded Product Development life cycle (EDLC), Trends in embedded Industry, Introduction to ARM family of processor.

TEXT BOOKS:

1. Introduction to embedded systems Shibu.K.V, TMH, 2009.

REFERENCE BOOKS:

1. Ayala & Gadre: The 8051 Microcontroller & Embedded Systems using Assembly and C, CENGAGE
2. Embedded Systems, Rajkamal, TMH, 2009.
3. Embedded Software Primer, David Simon, Pearson.
4. The 8051 Microcontroller and Embedded Systems, Mazidi, Mazidi, Pearson,.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B. Tech. Computer Science and Engineering – II Sem.

SIMULATION AND MODELLING

UNIT I: System models: Concepts, continuous and discrete systems, System modeling, types of models, subsystems, corporate model, and system study.

UNIT II: System Simulation: Techniques, comparison of simulation and analytical methods, types of simulation, Distributed log models, cobweb models.

UNIT III: Continuous system Simulation: Numerical solution of differential equations, Analog Computers, Hybrid Computers, continuous system simulation languages CSMP, system dynamic growth models, logistic curves.

UNIT IV: Probability concepts in simulation: Monte Carlo techniques, stochastic variables, probability functions, Random Number generation algorithms.

UNIT V: Queuing Theory: Arrival pattern distributions, servicing times, queuing disciplines, measure of queues, mathematical solutions to queuing problems.

UNIT VI: Discrete System Simulation: Events, generation of arrival patterns, simulation programming tasks, analysis of simulation output.

UNIT VII: GPSS & SIMSCRIPT: general description of GPSS and SIMSCRIPT, programming in GPSS.

UNIT VIII: Simulation Programming Techniques: Data structures, Implementation of activities, events and queues, Event scanning, simulation algorithms in GPSS and SIMSCRIPT.

Text Book:

Geoffrey Gordon: System Simulation, PHI .

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INFORMATION RETRIEVAL SYSTEMS

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

UNIT-II : Information Retrieval System Capabilities: Search, Browse, Miscellaneous

Cataloging and Indexing: Objectives, Indexing Process, Automatic Indexing, Information Extraction.

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

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

UNIT-V :Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters.

UNIT-VI : User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, Weighted searches of Boolean systems, Searching the Internet and hypertext.

UNIT-VII : Information Visualization: Introduction, Cognition and perception, Information visualization technologies.

UNIT-VIII : Text Search Algorithms: Introduction, Software text search algorithms, Hardware text search systems.
Information System Evaluation: Introduction, Measures used in system evaluation, Measurement example – TREC results.

Text Books:

1. Kowalski, Gerald, Mark T Maybury: Information Retrieval Systems: Theory and Implementation, Kluwer Academic Press, 1997.

Reference Books:

1. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and Algorithms, Prentice Hall, 1992.
2. Modern Information Retrival By Yates Pearson Education.
3. Information Storage & Retieval By Robert Korfhage – John Wiley & Sons.

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ARTIFICIAL INTELLIGENCE

UNIT I: Introducion to artificial intelligence: Introduction ,history, intelligent systems, foundations of AI, applications, tic-tac-tie game playing, development of ai languages, current trends in AI

UNIT II: Problem solving : state-space search and control strategies : Introduction, general problem solving, characteristics of problem, exhaustive searches, heuristic search techniques, iterative-deepening a*, constraint satisfaction

Problem reduction and game playing: Introduction, problem reduction, game playing, alpha-beta pruning, two-player perfect information games

UNIT III: Logic concepts: Introduction, propositional calculus, proportional logic, natural deduction system, axiomatic system, semantic tableau system in proportional logic, resolution refutation in proportional logic, predicate logic

UNIT IV: Knowledge representation : Introduction, approaches to knowledge representation, knowledge representation using semantic network, extended semantic networks for KR, knowledge representation using frames **advanced knowledge representation techniques:** Introduction, conceptual dependency theory, script structure, cyc theory, case grammars, semantic web

UNIT V: Expert system and applications : Introduction phases in building expert systems, expert system versus traditional systems, rule-based expert systems blackboard systems truth maintenance systems, application of expert systems, list of shells and tools

UNIT VI: Uncertainty measure: probability theory: Introduction, probability theory, Bayesian belief networks, certainty factor theory, dempster-shafer theory

Fuzzy sets and fuzzy logic: Introduction, fuzzy sets, fuzzy set operations, types of membership functions, multi valued logic, fuzzy logic, linguistic variables and hedges, fuzzy propositions, inference rules for fuzzy propositions, fuzzy systems.

UNIT VII: machine learning paradigms: Introduction, machine learning systems, supervised and unsupervised learnings, inductive learning, deductive learning, clustering, support vector machines, case based reasoning and learning

UNIT VIII: Artificial neural networks: Introduction, artificial networks, single layer feed forward networks, multi layered forward networks, design issues of artificial neural networks

Text Books:

1. Artificial Intelligence- Saroj Kaushik, CENGAGE Learning,
2. Artificial intelligence, A modern Approach , 2nd ed, Stuart Russel, Peter Norvig, PEA
3. Artificial Intelligence- Rich, Kevin Knight,Shiv Shankar B Nair, 3rd ed, TMH
4. Introduction to Artificial Intelligence, Patterson, PHI

Refernce Books:

1. Atificial intelligence, structures and Strategies for Complex problem solving, -George F Lugar, 5th ed, PEA
2. Introduction to Artificial Intelligence, Ertel, Wolf Gang, Springer
3. Artificial Intelligence, A new Synthesis, Nils J Nilsson, Elsevier

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MULTIMEDIA AND APPLICATION DEVELOPMENT

UNIT – I: Fundamental concepts in Text and Image: Multimedia and hypermedia, world wide web, overview of multimedia software tools. Graphics and image data representation graphics/image data types, file formats, Color in image and video: color science, color models in images, color models in video.

UNIT – II : Fundamental concepts in video and digital audio: Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.

UNIT – III: Action Script I: ActionScript Features, Object-Oriented ActionScript, Datatypes and Type Checking, Classes, Authoring an ActionScript Class.

UNIT – IV: Action Script II : Inheritance, Authoring an ActionScript 2.0 Subclass, Interfaces, Packages, Exceptions.

UNIT – V : Application Development : An OOP Application Frame work, Using Components with ActionScript MovieClip Subclasses.

UNIT – VI: Multimedia data compression : Lossless compression algorithm: Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Lossless Image Compression, Lossy compression algorithm: Quantization, Transform Coding, Wavelet-Based Coding, Embedded Zerotree of Wavelet Coefficients Set Partitioning in Hierarchical Trees (SPIHT).

UNIT – VII : Basic Video Compression Techniques: Introduction to video compression, video compression based on motion compensation, search for motion vectors, MPEG, Basic Audio Compression Techniques.

UNIT – VIII : Multimedia Networks: Basics of Multimedia Networks, Multimedia Network Communications and Applications : Quality of Multimedia Data Transmission, Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on-Demand(MOD).

TEXT BOOKS :

1. Fudamentals of Multimedia by Ze-Nian Li and Mark S. Drew PHI/Pearson Education.
2. Essentials ActionScript 2.0, Colin Moock, SPD O,REILLY.

REFERENCES :

1. Digital Multimedia, Nigel chapman and jenny chapman, Wiley-Dreamtech
2. Macromedia Flash MX Professional 2004 Unleashed, Pearson.
3. Multimedia and communications Technology, Steve Heath, Elsevier(Focal Press).
4. Multimedia Applications, Steinmetz, Nahrstedt, Springer.
5. Multimedia Basics by Weixel Thomson
6. Multimedia Technology and Applications, David Hilman , Galgotia

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SOFTWARE TESTING METHODOLOGIES

UNIT I: *Introduction:- Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs*

UNIT II: *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 III: *Transaction Flow Testing:-transaction flows, transaction flow testing techniques. Dataflow testing:- Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.*

UNIT IV: *Domain Testing:-domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and testability.*

UNIT V: *Paths, Path products and Regular expressions:- path products & path _expression, reduction procedure, applications, regular expressions & flow anomaly detection.*

UNIT VI: *Logic Based Testing:- overview, decision tables, path expressions, kv charts, specifications.*

UNIT VII: *State, State Graphs and Transition testing:- state graphs, good & bad state graphs, state testing, Testability tips.*

UNIT VIII: *Graph Matrices and Application:-Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools.*

Text Books:

1. *Software testing techniques - Baris Beizer, International Thomson computer press, second edition.*
2. Software Testing- Yogesh Singh, CAMBRIDGE

Reference Books:

1. Introduction to Software Testing, Paul Amman, Jeff Offutt, CAMBRIDGE
2. Effective Software testing, 50 Specific ways to improve your testing, Elfriede Dustin, PEA

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IV Year B. Tech. Computer Science and Engineering – II Sem.

NEURAL NETWORKS & SOFT COMPUTING

UNIT I : INTRODUCTION: what is a neural network? Human Brain, Models of a Neuron, Neural networks viewed as Directed Graphs, Network Architectures, Knowledge Representation, Artificial Intelligence and Neural Networks (Chapter-1 from Neural networks A comprehensive foundations, Simon Hhaykin, Pearson Education 2nd edition 2004)

UNIT II : LEARNING PROCESS: Error Correction learning, Memory based learning, Hebbian learing, Competitive, Boltzmann learning, Credit Asssignment Problem, Memory, Adaption, Statistical nature of the learning process, (Chapter-2 from Neural networks A comprehensive foundations, Simon Hhaykin, Pearson Education 2nd edition 2004)

UNIT III : Classical & Fuzzy Sets: Introduction to classical sets – properties, operations and relations; Fuzzy sets – memberships, uncertainty, operations, properties, fuzzy relations, cardinalities, membership functions (Chapter-6 from Neural Networks, Fuzzy Logic, Genetic Algorithms: Sysnthesis and Applications by Rajasekharan and Pai, PHI Publications).

UNIT IV : Fuzzy Logic System Components: Fuzzification, Membership value assignment, development of rule base and decision making system, Defuzzification to crisp sets, Defuzzification methods (Chapter-7 from Neural Networks, Fuzzy Logic, Genetic Algorithms: Sysnthesis and Applications by Rajasekharan and Pai, PHI Publications).

UNIT V : Concept Learning: Introduction, A concept learning task, Concept learning as search, Find-S: finding a maximally specific hypothesis, Version spaces and the candidate elimination algorithm (Chapter-2 of Machine Learning ,Tom M. Mitchell, MGH).

UNIT VI : Decision Tree learning: Introduction, Decision tree representation, Appropriate problems for decision tree learning, The basic decision tree learning algorithm, Hypothesis space search in decision tree learning (Chapter-3 of Machine Learning, Tom M. Mitchell, MGH).

UNIT VII : Genetic Algorithms-1: Motivation, Genetic Algorithms, An Illustrative Example, Hypothesis Space Search (Chapter-9 from Machine Learning ,Tom M. Mitchell, MGH).

UNIT VIII : Genetic Algorithms-2: Genetic Programming, Models of Evolution and Learning, Parallelizing Genetic Algorithms (Chapter-9 from Machine Learning ,Tom M. Mitchell, MGH).

TEXT BOOKS:

1. Neural networks A comprehensive foundations, Simon Hhaykin, Pearson Education 2nd edition 2004
2. Neural Networks, Fuzzy Logic, Genetic Algorithms: Sysnthesis and Applications by Rajasekharan and Pai, PHI Publications
3. Machine Learning ,Tom M. Mitchell, MGH

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IV Year B. Tech. Computer Science and Engineering – II Sem.

SOCIAL NETWORKS AND THE SEMANTIC WEB

UNIT-I: The Semantic web: Limitations of the current Web, The semantic solution, Development of the Semantic Web, The emergence of the social web.

UNITII: Social Network Analysis: What is network analysis?, Development of Social Network Analysis, Key concepts and measures in network analysis.

UNIT-III: Electronic sources for network analysis: Electronic discussion networks, Blogs and online communities, Web-based networks.

UNIT-IV: Knowledge Representation on the Semantic Web: Ontologies and their role in the Semantic Web, Ontology languages for the semantic Web.

UNIT-V: Modeling and Aggregating Social Network Data: State of the art in network data representation, Ontologicl representation of Social individuals, Ontological representation of social relationships, Aggregating and reasoning with social network data.

UNIT-VI: Developing social semantic applications: Building Semantic Web applications with social network features, Flink- the social networks of the Semantic Web community, Open academia: distributed, semantic-based publication management.

Unit-VII: Evaluation of Web-Based Social Network Extraction: Differences between survey methods and electronic data extraction, context of the empirical study, Data collection, Preparing the data, Optimizing goodness of fit, Comparison across methods and networks, Predicting the goodness of fit, Evaluation through analysis.

UNIT VIII: The Perfect Storm: Looking back-the story of Katrina People Finder, Looking ahead-a Second Life.

Text Book:

1. Peter Mika, "Social Networks and the Semantic Web", Springer International Edition.

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PARALLEL COMPUTING

UNIT I: Introduction: Computational demand in various application areas, advent of parallel processing, terminology-pipelining, Data parallelism and control parallelism-Amdahl's law. Basic parallel random access Machine Algorithms-definitions of P, NP and NP-Hard, NP-complete classes of sequential algorithms; NC–class for parallel algorithms.

UNIT II: Scheduling: Organizational features of Processor Arrays, Multi processors and multi-computers. Mapping and scheduling aspects of algorithms. Coffman-graham scheduling algorithm for parallel processors.

UNIT III: Algorithms-1: Elementary Parallel algorithms on SIMD and MIMD machines, Analysis of these algorithms. Matrix Multiplication algorithms on SIMD and MIMD models.

UNIT IV: Algorithms-2: Fast Fourier Transform algorithms. Implementation on Hyper cube architectures. Solving linear file -system of equations, parallelizing aspects of sequential methods back substitution and Tri diagonal.

UNIT V: Array processors: Array processors, 2D-Mesh processor and Hypercube Processor Array.

UNIT VI: Sorting: Parallel sorting methods, Odd-even transposition Sorting on processor arrays, Parallel Quick-sort on Multi processors. Hyper Quick sort on hypercube multi computers, merge sort on shuffle-exchange ID,

UNIT VII: Searching-1: Parallel search operations. Ellis algorithm and Manber and ladner's Algorithms for dictionary operations.

UNIT VIII: Searching-2: Parallel algorithms for Graph searching, All Pairs shortest paths and minimum cost spanning tree.

TEXT BOOKS:

1. Parallel computing theory and practice, Michel J.Quinn
2. Programming Parallel Algorithms, Guy E. Blelloch, Communications of the ACM

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E - COMMERCE

UNIT – I : Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications.

UNIT – II : Consumer Oriented Electronic commerce - Mercantile Process models.

UNIT – III : Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems.

UNIT-IV : Inter Organizational Commerce - EDI, EDI Implementation, Value added networks.

UNIT – V : Intra Organizational Commerce - work Flow, Automation Customization and internal Commerce, Supply chain Management.

UNIT – VI: Corporate Digital Library - Document Library, digital Document types, corporate Data Warehouses. Advertising and Marketing - Information based marketing, Advertising on Internet, on-line marketing process, market research.

UNIT – VII : Consumer Search and Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering.

UNIT – VIII : Multimedia - key multimedia concepts, Digital Video and electronic Commerce, Desktop video processings, Desktop video conferencing.

TEXT BOOK :

1. Frontiers of electronic commerce – Kalakata, Whinston, Pearson.
2. E-Commerce , strategy, Technology, and Implementation,

REFERENCES :

1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.

2. E-Commerce, S.Jaiswal – Galgotia.

3. E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang.
4. Electronic Commerce – Gary P.Schneider – Thomson.
5. E-Commerce – Business, Technology, Society, Kenneth C.Taudon, Carol Guyerico Traver.

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IV Year B. Tech. Computer Science and Engineering – II Sem.

DISTRIBUTED SYSTEMS

UNIT I: Characterization of Distributed Systems: Introduction, Examples of Distributed Systems, Resource Sharing and The Web, Challenges.

UNIT II: System Models: Introduction, Architectural Models- Software Layers, System Architecture, Variations, Interface and Objects, Design Requirements for Distributed Architectures, Fundamental Models- Interaction Model, Failure Model, Security Model.

UNIT III: Interprocess Communication: Introduction, The API for the Internet Protocols- The Characteristics of Interprocess communication, Sockets, UDP Datagram Communication, TCP Stream Communication; External Data Representation and Marshalling; Client Server Communication; Group Communication- IP Multicast- an implementation of group communication, Reliability and Ordering of Multicast.

UNIT IV: Distributed Objects and Remote Invocation: Introduction, Communication between Distributed Objects- Object Model, Distributed Object Modal, Design Issues for RMI, Implementation of RMI, Distributed Garbage Collection; Remote Procedure Call, Events and Notifications, Case Study: JAVA RMI

UNIT V: Operating System Support: Introduction, The Operating System Layer, Protection, Processes and Threads – Address Space, Creation of a New Process, Threads.

UNIT VI: Distributed File Systems: Introduction, File Service Architecture; Peer-to-Peer Systems: Introduction, Napster and its Legacy, Peer-to-Peer Middleware, Routing Overlays.

UNIT VII: Coordination and Agreement: Introduction, Distributed Mutual Exclusion, Elections, Multicast Communication.

UNIT VIII: Transactions & Replications: Introduction, System Model and Group Communication, Concurrency Control in Distributed Transactions, Distributed Dead Locks, Transaction Recovery; Replication-Introduction, Passive (Primary) Replication, Active Replication.

Text Books:

1. Ajay D Kshemkalyani, Mukesh Sighal, "Distributed Computing, Principles, Algorithms and Systems", Cambridge
2. George Coulouris, Jean Dollimore, Tim Kindberg, "Distributed Systems- Concepts and Design", Fourth Edition, Pearson Publication