LAKIREDDY BALIREDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
(Approved by AICTE, Affiliated to JNTUK, Accredited by NBA,
ISO 9001 : 2008 Certified & Accredited by NAAC with “A” Grade)

B.TECH. FOUR YEAR DEGREE COURSE
(Applicable for the batch admitted 2010-11)

COMPUTER SCIENCE AND ENGINEERING

L.B.Reddy Nagar :: Mylavaram – 521 230 :: Krishna District
ANDHRA PRADESH STATE
### COURSE STRUCTURE (2010-2011 Admitted Batch)

**I-SEMESTER (COMMON TO ALL BRANCHES)**

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**TOTAL CREDITS : 220**
I-SEMESTER
UNIT - I


UNIT - II

Linear differential equations of second and higher order with constant coefficients and with variable coefficients, method of variation of parameters and their simple applications to Simple Harmonic Motion and Electrical Circuits.

UNIT - III

Generalized Mean Value theorems (without proof), Functions of several variables, Maxima and Minima of functions of two variables with constraints and without constraints. Lagrangian Multiplier method.

UNIT - IV

Curve tracing – Cartesian curves. Applications of Integration to Lengths, Volumes and Surface areas of revolution in Cartesian Coordinates. Multiple integrals - double and triple integrals (Cartesian Coordinates only) – Changing of order of Integration. (Cartesian Coordinates only)

UNIT - V


TEXT BOOKS

1. Higher Engineering Mathematics by Dr. B.S. Grewal
2. Higher Engineering Mathematics by Dr. B. V. Ramana – TMGH

REFERENCES

T131 – C - PROGRAMMING

Lecture : 4 Periods/week  Internal Marks : 25
Tutorial : 1 Period/Week  External Marks : 75
Credits  : 4  External Examination : 3 Hrs

UNIT - I

Algorithm / pseudo code, flowchart, program development steps, structure of C program, A Simple C program, identifiers, basic data types and sizes, Constants, variables, arithmetic, relational and logical operators, increment and decrement operators, conditional operator, bit-wise operators, assignment operators, expressions, type conversions, conditional expressions, precedence and order of evaluation. Input-output statements, statements and blocks, if and switch statements, loops- while, do-while and for statements, break, continue, goto and labels, programming examples.

UNIT - II

Designing structured programs, Functions, basics, parameter passing, storage classes- extern, auto, register, static, scope rules, block structure, user defined functions, standard library functions, recursive functions, header files, C preprocessor, example c programs.

UNIT - III

Arrays- concepts, declaration, definition, accessing elements, storing elements, arrays and functions, two dimensional and multi-dimensional arrays, applications of arrays, pointers- concepts, initialization of pointer variables, pointers and function arguments, address arithmetic, Character pointers and functions, pointers to pointers, pointers and multidimensional arrays, dynamic memory managements functions, command line arguments, c program examples.

UNIT - IV

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, bitfields, C program examples.

UNIT - V

Input and output – concept of a file, text files and binary files, streams, standard I/o, Formatted I/o, file I/o operations, error handling, C program examples.

TEXT BOOKS

2. The C Programming Language, B.W. Kernighan, Dennis M.Ritchie, PHI/Pearson Education
REFERENCES

3. C and Data Structures:A Snap Shot Oriented Treatise Using Live Engineering Examples by Prof. N.B.Venkateswarlu and, Prof.E.V.Prasad, S Chand & Co, New Delhi
4. C/C++ for Engineers and Scientists, Harry H.Cheng,McGrawHill,
T197 - ENGLISH - I

<table>
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OBJECTIVES

- To improve the language proficiency of the students in English with emphasis on LSRW skills.
- To develop the study skills and Communication skills of the students in both formal and informal situations.
- To enable the students to face the academic and professional challenges of the present day scenario.
- To help students acquire the ability to speak effectively in English in the real life situations.
- To inculcate reading as a habit and to develop reading skills among students.
- To train students to improve their active and passive vocabulary.
- To familiarize the students with different rhetorical functions of Technical English.
- To enable the students write letters and reports effectively in formal and professional situations.

UNIT - I

Chapter – 1: “Read & Proceed” from Step by Step (Pearson)
Extensive Reading - Masterminds– The Trailblazers – Jagadis Chandra Bose (Orient Longman)

UNIT - II

Chapter – 2: “Travel” from Step by Step (Pearson)
Extensive Reading - Masterminds– The World of Figures and Physics – Chandra SekharaVenkata Raman (Orient Longman)

UNIT - III

Chapter – 3: “Gender” from Step by Step (Pearson)
Extensive Reading - Masterminds–The Institution Builders– Shanti SwarupBhatnagar (Orient Longman)
UNIT - IV

Vocabulary – Synonyms, Antonyms, Words often Confused, Gerunds & Infinitives, Prefixes & Suffixes, Word plurals, Analogy
Grammar – Parts of Speech, Sentence Completion, Question Tags, Tense and Aspect

UNIT - V

Analytical Writing – Sentence Construction – Types of sentences, Exercises with scrambled words & Jumbled sentences, Paragraph writing, Dialogue writing (Formal & Informal), Letter Writing (Formal & Informal), Resume writing, Expansion (of a given topic), Abstract Writing (Summarizing / Synopsis), Decision-making, Drafting E-Mails & Memo writing, Essay writing.

TEXT BOOKS

- Step by Step (Pearson)
- Masterminds by Enakshi Chatterjee (Orient Longman)

REFERENCES

UNIT - I


UNIT - II

FUELS AND COMBUSTION: Definition and classification of Fuels- conventional fuels (solid, liquid, gaseous), Solid fuels- coal - analysis, Proximate and ultimate analyses of coal – significances, Liquid Fuels – primary- petroleum- refining of petroleum- cracking, knocking, synthetic petrol – Bergius and Fischer Tropsech’s process; Gaseous fuels- octane number – cetane number,– water gas, producer gas CNG, and biogas - gross and net calorific values – (definition only) – flue gas analysis – Orsat’s apparatus.

UNIT - III


UNIT - IV

UNIT - V


2. LUBRICANTS: Introduction to Lubricants, Principles and function of lubricants - Types of Lubrication and Mechanism - Thick Film or Hydrodynamic Lubrication, Thin Film or Boundary Lubrication, Extreme Pressure Lubrication. Classification and properties of lubricants-Viscosity, flash and fire point, cloud and pour point, aniline point, Neutralization Number and mechanical strength, Selection of lubricants.

TEXT BOOKS


REFERENCES

UNIT - I

INTERFERENCE: Superposition of waves-double slit interference- Young’s double slit experiment- Coherence – Interference from thin films- Newton’s rings.

DIFFRACTION: Diffraction and wave theory of light (Fresnel and Fraunhofer diffractions) - single slit Diffraction, Intensity in single- slit diffraction, Calculating the intensity- Double slit interference and diffraction combined.

GRATINGS AND SPECTRA - Multiple slits-width of the maxima, Diffraction gratings, Grating spectrum – Dispersion and Resolving power.

POLARIZATION: Polarization by reflection Brewster's law - Double refraction-Polarization by scattering - Retarders -Optical Activity.

UNIT - II

CRYSTAL STRUCTURES: Introduction –periodic arrays of atoms-Lattice translation vectors, Basis and crystal structure, Primitive cell, fundamental types of lattices-three dimension lattice types, Crystal systems- Structure and packing fractions of Simple cubic-Body centered cubic- Face centered cubic crystals.

X-RAY DIFFRACTION: Directions and planes in crystals – Miller indices – separation between successive ( h k l ) planes- Diffraction of X- rays by crystal planes – Braggs law- Laue method- powder method.

UNIT - III


UNIT - IV

SUPER CONDUCTIVITY :Phenomenon, Meissner effect, critical parameters, Type I, Type II Super conductors, BCS theory of super conductivity, Applications of Super conductors.

UNIT - V


TEXT BOOKS
2. Engineering Physics by V RAJENDRAN TataMcGrahill

REFERENCES
1. Introduction to solid state physics, C. Kittel, John wiley, 1999.
2. Engineering physics by H K MALIK AK SINGH TATA McGRAHILL
P806 – C - PROGRAMMING LAB

Lab/Practicals: 3 Period/Week
Credits: 2

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<td>3 Hrs</td>
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</table>

I) Write a programme in ‘C’ language to cover the following problems.
   a) Roots of Quadratic Equation.
   b) Example program which shows the usage of various Operators available in C Language.
   c) Example program which shows the usage of various preliminary Data types available in C Language.
   d) Example programs to illustrate the order of evaluation.

II) WRITE EXAMPLE PROGRAMS:
   a) To check whether the given year is leap year (or) not
   b) Converting given two digit number into words using switch statement
   c) To illustrate the usage of ‘goto’ statement.
   d) Finding smallest & biggest number from the given set of 4 numbers using ‘if’ statement.
   e) Calculate the student grade in the examination – assume suitable constraints.
   f) Prepare electricity bill for the consumed units – assume suitable constraints.

III) EXAMPLE PROGRAMS:
   a) To Display first N natural numbers
   b) To find whether the given number is Armstrong (or) not
   c) To find reverse of the given number and to check whether it is palindrome (or) not.
   d) To find whether given number is strong number (or) not.
   e) To check whether given number is Prime (or) not
   f) To display prime numbers with in the given range (Nesting of Loops).
   g) To display the following structure (Nesting of Loops)

\[
\begin{array}{cccccc}
& 1 & 2 & 3 & 4 & 5 \\
1 & & 1 & 2 & 3 & 4 \\
2 & 1 & 2 & 3 & 4 & 5 \\
3 & 2 & 1 & & & \\
4 & 3 & 2 & 1 & & \\
5 & 4 & 3 & 2 & 1 & \\
\end{array}
\]

Write example programs in C Language:
a) To find factorial of a given number using functions.
b) Swap two numbers using functions.
c) To find GCD of two numbers using recursion
d) Write a recursive function to solve Towers of Honai problem.
e) Write an example program to illustrate use of external & static storage classes.

V) Write example programs in C Language to perform following operations:
   a) Finding the sum and average of given numbers using Arrays.
b) To display elements of array in reverse order
c) To search whether the given element is in the array (or) not using linear search & binary search.
d) Write a C program to perform the following operations
   i) Addition, subtraction and multiplication of Matrices
   ii) Transpose of given matrix
       (The above operations are to be exercised using functions also by passing arguments)
e) Write a C program to find whether the given string is palindrome (or) not.
f) To accept line of text and find the number of characters, number of vowels and number of blank spaces in it.
g) Write an example program to illustrate the use of any 5 string handling functions.

VI) a) Example program to bring clarity on pointer declaration & initialization and Pointer arithmetic.
b) Write an example program to describe the usage of call by reference.
c) Write a program to find sum of the elements of the array using functions.
d) Write an example program to illustrate the usage of command line arguments.
e) Program to illustrate the usage of dynamic memory management functions.

VII) a) Write an example program using structures to process the student record. Assume suitable fields for student structures (Different kinds of initialization of structure variables are to be exercised)
b) Write a program to read records of 10 employees and find their average salary (exercise array of structures & Nested structures concepts through this program).
c) Write a program to handle a structure variable using pointers and implement self referential structure(i.e. A structure variable having a pointer to itself)

VIII) Write an example program on file to perform following operations:
a) Accessing content from files and writing content in to it.
   (Exercise different file operation modes)
b) Copy the contents of one file into another (Exercise different file operation modes)
P830 - ENGINEERING PHYSICS AND CHEMISTRY LAB

Internal Marks : 25

Lab/Practicals: 3 Period/Week

External Marks : 75

Credits : 2

External Examination : 3 Hrs

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ENGINEERING PHYSICS LABORATORY
(Any 5 experiments)

LIST OF EXPERIMENTS

1. LCR Resonance circuit

2. Newton's Rings – Determination of Radius of curvature of plano convex lens

3. Verification of laws by using sonometer

4. Meldy's experiment

5. Wedge shaped film

6. Volume Resonator

7. Refractive index of light

8. Diffraction Grating – Normal incidence method

9. Rigidity modulus of a given wire

10. Frequency of AC supply – Sonometer

----------------------------------------------------------------------------------------------------------------------

ENGINEERING CHEMISTRY LABORATORY
(Any 5 experiments)

1. Estimation of total Hardness of water by EDTA method

2. Determination of Temporary and permanent hardness of water.

3. Iodometric Titration of K₂Cr₂O₇ v/s Na₂S₂O₃ to determine the percentage purity of K₂Cr₂O₇ sample.

4. Preparation of Standard Potassium Dichromate and Estimation of Copper by Iodometry.

5. Determine the amount of Oxalic acid and Sulphuric acid in 1 liter solution by using given standard Sodium Hydroxide and Potassium Permanganate solution


7. Determination of Dissolved Oxygen (DO) content by Winkler’s method.

Preparation of Urea formaldehyde resin.
P831 - ENGINEERING WORKSHOP

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TRADES FOR EXERCISES: (Common to EEE, ECE, CSE, EIE & IT)

At least three exercise from each trade:

1. Carpentry
2. Fitting
3. House – Wiring
4. Plumbing

TRADES FOR EXERCISES: (MECHANICAL ENGINEERING)

At least two exercise from each trade:

1. Carpentry
2. Fitting
3. Tin - Smithy
4. Black - Smithy
5. House - Wiring
6. Plumbing

TEXT BOOK

UNIT - I


UNIT - II


UNIT - III


UNIT - IV

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions – solutions of first order linear (Lagrange) equation. Method of Separation of Variables - Applications to wave equation one dimensional, heat equation and Laplace Equation.

UNIT - V

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

TEXT BOOKS

1. Higher Engineering Mathematics by Dr. B.S. Grewal
2. Higher Engineering Mathematics by Dr. B. V. Ramana – TMGH

REFERENCES

T198 - ENGLISH-II

Lecture : 4 Periods/week  Internal Marks : 25  
Credits : 3  External Marks : 75


External Examination : 3 Hrs

English Language continues to be regarded as an important tool for global communication and employability. Hence, it is imperative that students need to acquire communicative competence besides their core skills. The syllabus has been designed to develop linguistic and communicative competence of Engineering students with special emphasis on professional and functional aspects of English language i.e., on Listening, Speaking, Reading and Writing (LSRW Skills).

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- To train students to improve their active and passive vocabulary.
- To familiarize the students with different rhetorical functions of Technical English.
- To enable the students write letters and reports effectively in formal and professional situations.

UNIT - I

Chapter 4: “Disaster Management” from Step by Step (Pearson)  
Extensive reading – Masterminds - The institution builders - MeghanadSaha (Orient Longman)

UNIT - II

Chapter 5: “Health” from Step by Step (Pearson)  
Extensive reading – Masterminds- The New Age – HomiJehangirBhabha (Orient Longman)

UNIT - III

Chapter 6: “Sports” from Step by Step (Pearson)  
Extensive reading – Masterminds - The New Age – Vikram Sarabhai (Orient Longman)

UNIT - IV

Grammar – Articles, Prepositions, Voice, Speech, Concord, Correction of Sentences  
Vocabulary – Phrasal verbs, Gerunds, Infinitives, One word Substitutes.

UNIT - V

Analytical writing – Comprehension, Technical dialogue writing,  
Presentation skills - Note making, Information transfer / Data interpretation (Tables, Pie charts, Bar graphs, Tree diagrams, Pictograms, etc.), Report writing.
TEXTBOOK

Master Minds, (Orient Longman).

REFERENCES

4. GRE and TOEFL, Kaplan and Baron's, Latest editions.
T264 - NUMERICAL METHODS

Lecture : 4 Periods/week
Tutorial : 1 Period/Week
Credits : 4
Internal Marks : 25
External Marks : 75
External Examination : 3 Hrs

UNIT - I

UNIT - II

UNIT - III

UNIT - IV

UNIT - V

TEXT BOOKS
1. Higher Engineering Mathematics by Dr. B.S. Grewal
2. Higher Engineering Mathematics by Dr. B. V. Ramana – TMGH

REFERENCES
1. Introductory Methods of Numerical Analysis by S. S. Sastry – PHI
2. Numerical Methods for Engineers with programming and software application by Steven .C. Chopra and Ra. P. Canale – TMGH
T153 – DATA STRUCTURES

Lecture : 4 Periods/week  
Internal Marks : 25
Tutorial : 1 Period/Week  
External Marks : 75
Credits : 5  
External Examination : 3 Hrs

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UNIT - I

Algorithm Analysis:  
Mathematical Background, Model, Analysis and Run Time Calculations, Lists: Abstract Data Types, the List ADT, Singly Linked, Doubly Linked, Circular Linked List ADTs, Polynomial ADT.

UNIT - II

Stacks And Queues: The Stack ADT and applications; Infix to postfix expression conversion, Evaluation of Postfix expressions. The Queue ADT and Applications.

UNIT - III


UNIT - IV


UNIT - V

Hashing: Hash Function, Separate Chaining, Open Addressing, Rehashing, and Extendible Hashing.

TEXT BOOK

Mark Allen Weiss: “Data Structures and Algorithm Analysis in C”, 2 nd ed, AW.

REFERENCES

T188 – ELECTRONIC DEVICES AND CIRCUITS

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UNIT - I


UNIT - II

RECTIFIERS AND FILTERS: Half wave rectifier, ripple factor, full wave rectifier, Harmonic components in a rectifier circuit, Inductor filter, Capacitor filter, L- ?section filter, II- section filter, Multiple L- section and Multiple IIsection filter, and comparison of various filter circuits? in terms of ripple factors, basics of regulators.

UNIT - III

TRANSISTOR and FET CHARACTERISTICS: Junction transistor, Transistor current components, Transistor as an amplifier, Transistor construction, Current components in a transistor, Input and Output characteristics of transistor in Common Base, Common Emitter, and Common collector configurations, Relation between Alpha, Beta and gama, FET- JFET characteristics, Small signal model of JFET, MOSFET characteristics (Enhancement and depletion mode), Comparison of Transistors, Introduction to SCR and UJT.

UNIT - IV

BIASING AND STABILISATION: BJT biasing, DC equivalent model, criteria for fixing operating point, Fixed bias, Collector to base bias, Self bias techniques for stabilization, Stabilization factors, (S, S', S''), Compensation techniques, (Compensation against variation in $V_{BE}, I_{C}$) Thermal run away, Thermal stability.

UNIT - V

AMPLIFIERS: Small signal low frequency transistor amplifier circuits: $h$-parameter representation of a transistor, Analysis of single stage transistor amplifier using $h$-parameters: voltage gain, current gain, Input impedance and Output impedance. Comparison of transistor configurations in terms of $A_v, R_i, A_c, R_o$. Introduction to feedback Amplifier and Oscillators.

TEXT BOOK
REFERENCES

1. Write an interactive C program to create a linear linked list of customer names and their telephone numbers. The program should be menu-driven and include features for adding a new customer, deleting an existing customer and for displaying the list of all customers.
2. Write a C program to merge two circular linked lists.
3. Write a C program to create a circular linked list so that the input order of data items is maintained. Add the following functions to carry out the following operations on circular linked lists. a. Count the number of nodes. Write a C program to implement Polynomial ADT.
4. Write a C program that will remove a specified node from a given doubly linked list and insert it at the end of the list. Also write a function to display the contents of the list.
5. Write a C program to implement a queue in which insertions, deletions and display can be performed.
6. Write a program for evaluating post fixed expressions using array and linked list implementation of list ADT.
7. Write a C program to construct a binary tree and do inorder, preorder and postorder traversals, printing the sequence of vertices visited in each case.
8. Sort a sequence of n integers using Quick sort technique and then search for a key in the sorted array using Binary search technique.
9. Write a C Program for Checking balanced parenthesis using array implementation of stack ADT.
10. Write a program for Checking balanced paranthesis using linked list implementation of Stack ADT.
11. Write a C program to Search tree ADT-Binary search ADT.
12. Write a C program to Heap sort
13. Write a C program to Quick sort
14. Write a C Program to implement Merge Sort
15. Write a C Program to implement Shell Sort
16. Write a C Program to implement Multiway Merge Sort
17. Write a C Program to implement Poly Phase Merge Merge Sort
Write a C Program to implement hashing methods
P829 - ENGINEERING DRAWING WITH AUTOCAD LAB.

Lab/Practicals: 3 Period/Week
Credits: 2

Internal Marks: 25
External Marks: 75
External Examination: 3 Hrs

UNIT - I

Introduction to Engineering Drawing and its importance - Introduction to Computer Aided Drafting, Auto CAD commands, Setup Commands, Drawing Commands, Editing Commands, Dimensioning Commands - Theory of Projection – Elements of projection, planes of projection, and methods of projection. Orthographic Projection - Lines used in general engineering drawing, types of surfaces, invisible lines, precedence of lines, selection of views, principles of multi view drawing, steps to draw orthographic views, orthographic projection of different objects.

UNIT - II

Isometric Drawing- Theory of isometric projection-Isometric view and Isometric projection Isometric projection from Orthographic views for simple objects.

UNIT -III

Projections of points - Projection of straight Lines – Various positions of straight lines w.r.t reference planes, inclined to both planes.

UNIT - IV

Projections of Planes – Introduction, Planes parallel to reference planes, inclined to one reference plane and perpendicular to other, planes perpendicular to both reference planes, planes inclined to both reference planes.

UNIT - V

Projections of Solids – Types of solids, Polyhedra, solids of revolution, Projection of solids in simple position, projection of solids with axis inclined to one reference plane and parallel to other.

TEXT BOOKS

P827 – ELECTRONIC DEVICES AND CIRCUITS USING LABVIEW

Lab/Practicals : 3 Period/Week
Credits : 2

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1. Identification, Specifications, Testing of R, LC Components (Colour Codes), and basic Electronic Instruments.

2. PN junction diode characteristics

3. Zener diode characteristics

4. Full wave Rectifier without & with filters

5. Transistor CB characteristics

6. Transistor CE characteristics

7. FET characteristics

8. CE Amplifier

9. CC Amplifier

10. FET Amplifier
UNIT - I

Mathematical Logic:
Predicate calculus: Predicative Logic, Statement Functions, Variables and Quantifiers, Free & Bound Variables, Inference theory for predicate calculus.

UNIT - II

Set Theory:
Introduction, Operations on Binary Sets.

UNIT - III

Graph Theory:

UNIT - IV

Algebraic Structures: 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), Combinatorics: Basic of Counting, Permutations, Permutations with Repetition of Objects, Restricted Permutations, Combinations, Restricted Combinations, Pigeonhole Principle and its Application, Binomial Theorem, Binomial and Multinomial Coefficients.

UNIT - V

Recurrence Relation: Generating Function of Sequences, 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

REFERENCES
1. Discrete Mathematics, S.Santha, Cengage
2. Discrete Mathematics with Applications, Thomas Koshy, Elsevier
3. Discrete Mathematics, 2/e, JK Sharma, Macmillan
5. Discrete and Combinational Mathematics, 5/e, Ralph P. Grimaldi, Ramana, Pearson
6. Elements of Discrete Mathematics, CL Liu, Mahapatra, TMH
T285 – PROBABILITY AND STATISTICS

Lecture : 4 Periods/week  
Internal Marks : 25

Tutorial :  
External Marks : 75

Credits : 4  
External Examination : 3 Hrs

UNIT - I

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

UNIT - II


UNIT - III

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 mean, variance and proportions.

UNIT - IV

Statistical Hypothesis – Errors of Type I and Type II errors and calculation. One tail and two-tailed tests. Testing of hypothesis concerning means, proportions and their differences using Z-test.
Tests of hypothesis using Student’s t-test, F-test and $\chi^2$ test. Applications of decision making using the above tests.

UNIT - V

Simple Correlation and Regression.
Queuing Theory: Pure Birth and Death Process M/M/1 Model and Simple Problems related to the evaluation of waiting time, length of the queue etc.

TEXT BOOK

Probability and Statistics for Engineers, Miller, John E. Freund, PHI

REFERENCES

1. Probability and Statistics, Gupta & Kapoor
2. Probability, Statistics and Queuing theory applications for Comp. Sciences, 2/e, Trivedy, John Wiley
LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS), MYLAVARAM - 521230

T162 – DIGITAL LOGIC DESIGN

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UNIT - I


UNIT - II

Simplification Of Boolean Expressions: Formulation of simplification problem, Prime Implicants and irredundant disjunctive and conjunctive expression, Kamaugh Maps, Minimal Expressions for complete and incomplete Boolean functions. Five and Six Variable K-Maps, Quine-McCluskey Method, Prime Implicants and Implicate tables and irredundant expressions, and Table reductions.

UNIT - III


UNIT - IV


UNIT - V

Programmable Logic: Read – Only Memory (ROM), PROM, Programmable Logic Device (PLD), Programmable Logic Array (PLA), Programmable Array Logic (PAL).

TEXT BOOKS

M. Morris Mano, 'Digital Logic and Computer Design', PHI.

REFERENCES

1. M. Morris Mano, 'Computer Engineering Hardware Design', PHI
2. Donald e Givone, Digital principles and Design, TMH (Unit II and V)
UNIT - I

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

Natural Resources: Renewable and non-renewable resources – Natural resources and associated problems – Forest resources – Use and over – exploitation, deforestation, case studies – Timber extraction – Mining, dams and other effects on forest and tribal people – Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems -Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources. Case studies. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles. [11 Lectures]

UNIT – II


UNIT – III

Environmental Pollution: Definition, Types, 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. [11 Lectures]
UNIT - IV


UNIT - V


TEXT BOOKS

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCES

Textbook of Environmental Sciences and Technology by M. Anji Reddy BS Publication
UNIT - I

Introduction
OOP Paradigm, OOPS principles, Merits of OOP languages, Demerits of Procedure Oriented Programming languages, C++ Overview, Data types, Identifiers, Operators, Type casting, C++ Characteristics, Difference between class and structure, declaration of variables, dynamic initialization of variables, new and delete operators, I/O Manipulators.

UNIT - II

Classes and Objects:
Defining Classes in C++, accessing class members, access specifiers (Public and Private), defining member functions, static data members, static member functions, friend functions, friend classes, inline functions, nested classes, passing objects to functions, returning objects, object assignment, Array of objects, Constructor and Destructor, constant and volatile keywords, constant and volatile member functions.

UNIT - III

Inheritance:
Base class, derived class, access specifier (Protected), scope rules, abstract base class, virtual base class, single inheritance, multiple inheritance, multilevel inheritance, hierarchical inheritance and hybrid inheritance, calling base class constructors.
String class—Usage of standard library string class with example programs.

UNIT - IV

Polymorphism:
Pointers, Pointers to objects, 'this' Pointer, Pointers to derived Classes. Concept of Polymorphism, Compile time Polymorphism: Operator Overloading, Overloading Unary Operators, and Overloading Binary Operators, Function Overloading,
Run time Polymorphism: Virtual functions, Pure Virtual Functions.
Templates: Introduction, Class Templates, Function Templates.

UNIT - V

Files and Exception Handling:
Exception Handling: Introduction, Mechanism, throw, catch, Specifying Exceptions.
I/O Streams: C++ Streams, C++ Stream classes, Unformatted I/O Operations, Formatted I/O Operations, Formatting using Manipulators.
TEXT BOOK


REFERENCES

1. Design AND, OR and EX_ OR gates using NAND (7400) gates and verify them.

2. (A) Design a BCD to 6-3-1-1 Code converter and verify.
   (B) Design a 6-3-1-1 to Gray Code converter and verify.

3. Design a full adder circuit using AND, OR and XOR gates. Verify it. Design a 4-Bit comparator using logic gates.


5. Design a 4-bit ripple carry adder, and verify by adding unsigned and signed integers. Check the overflow condition. Use BCD-to-SSD Decoders to demonstrate the results.


7. (A) Design a Bi-directional counter using J-K Flip-flops.
   (B) Design a Counter which counts the following arbitrary sequence: 0101, 0001, 1000, 1001, 1010, 0000, 0101...

8. Design a priority multiplexer for 8 Devices. Each device has one data output line, a request output line, and an acknowledgement input line. The data from the highest priority device has to be made available at the output of the priority multiplexer, and an acknowledgement has to be sent to that device. Hint: The circuit may be designed using priority encoder, multiplexer and decoder.

9. Write and verify a VHDL code, using verilog or for simulation of a 4-Bit fast look ahead carry adder using Logic gates, full adders etc.

10. Write and verify a VHDL code, using verilog, for simulation of an 8-bit signed integer multiplier using carry save adders.
P861 – OBJECT ORIENTED PROGRAMMING (C++) LAB.

Objectives:
- To make the students familiar with the concepts of Object Oriented Programming using C++
  1. Write a C++ program to find the sum of individual digits of a positive integer.
  2. Write a C++ program to generate the first ‘n’ terms of the sequence. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are formed by adding the preceding two terms in the sequence.
  3. Write a C++ program to generate all the prime numbers between 1 and n. Where ‘n’ is a value supplied by the user.
  4. Write a C++ programs that use both recursive and non-recursive functions
     a) To find the factorial of a given integer.
     b) To find the GCD of two given integers.
     c) To find the n^th Fibonacci number.
  5. Write a C++ program to perform addition, subtraction and multiplication operations on two complex numbers using classes and objects.
  6. Write a C++ program to find out the total and average marks of 10 students using Classes and objects?
  7. Write a C++ program to implement static data members and static member functions
  8. Write a C++ program to implement the matrix ADT using a class. The operations supported by this ADT are:
      a) Reading a matrix.
      b) Displaying a matrix
      c) Addition of matrices.
      d) Multiplication of matrices.

  9. Write a C++ program to illustrate the usage of following:
      Default Constructor, Parameterized Constructor, Copy Constructor and Destructor
  10. Write a C++ program that illustrates the following:
      a) Friend Function
      b) Inline function
  11. Write C++ programs that illustrates the usage of following forms of inheritance. (Exercise the access specified protected also)
      a) Single Inheritance
      b) Multiple Inheritance
      c) Multi level Inheritance
      d) Hierarchical Inheritance
  12. Write a C++ program to count the lines, words and characters in a given text using standard library string object.
  13. Write a C++ program that illustrates the concept of Function over loading?
  14. Write a C++ program that overloads the binary + operator to concatenate two strings and to add two complex numbers.
  15. Write a C++ program that overloads the unary ++ operator to increment each element of the given one dimensional array by ‘1’?
  16. Write a C++ program that illustrates run time polymorphism by using virtual functions.
  17. Write a template based C++ program to check whether the given item is existed in the array or not.
  18. Write an example C++ program to illustrate the procedure of exceptions handling.
  19. Write a C++ program to display the contents of a text file.
  20. Write a C++ program which copies the contents of one file to another.
P832 – ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

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<tr>
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<th>Lab.</th>
<th>Internal Marks</th>
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<tbody>
<tr>
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<td></td>
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<tr>
<td>Credits</td>
<td>2</td>
<td>External Examination</td>
<td>3 Hrs</td>
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</tbody>
</table>

The English Language Communications Skills Lab focuses on practice of sounds of language and familiarizes the students with the use of English in everyday situations and contexts. It aims at improving the communicative competence of students and to enrich their power of expression, articulation and persuasiveness. The thrust is on developing competences, both linguistic as well as communicative, in order to improve employability potential.

Objectives

1. To expose the students to a variety of self-instructional, learner-friendly modes of English language learning and stimulate intellectual and attitudinal exercise.
2. To provide students with the required facility and practice to face computer-based Competitive exams such as GRE, TOEFL, IELTS etc.
3. To enable them to learn better pronunciation through emphasis on word accent, intonation and rhythm.
4. To train them to use language effectively to face interviews, group discussions, public Speaking.
5. To develop necessary attitudes and behaviors so as to improve their employability quotient.

SYLLABUS

The following course content is prescribed for the English Language Communication Skills Laboratory sessions:

1. Dimensions of Phonetics: Phonetic Transcription, Sounds, Stress, Intonation, Rhythm, Varieties of Spoken English: Indian, British and American
2. Oral Presentations -- Prepared and Extempore -- JAM
3. Role Play
4. Describing Objects / Situations / People
5. Information Transfer
6. Debates
7. Group Discussions

SUGGESTED SOFTWARE

1. Digital Mentor: Globarena, Hyderabad, 2005
4. Dorling Kindersley Series of Grammar, Punctuation, Composition, Dorling Kindersley, USA, 2001
IV-SEMESTER
T155 – DATABASE MANAGEMENT SYSTEMS

Lecture : 4 Periods/week Internal Marks : 25
Tutorial : 1 External Marks : 75
Credits : 4 External Examination : 3 Hrs

UNIT - I

Introduction: An overview of database management system, database system Vs file system, Database system concepts and architecture, data models schema and instances, data independence and data base language and interfaces, Data definitions language, DML, Overall Database Structure.
Data modeling using the Entity Relationship Model: ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, extended ER model, relationships of higher degree.

UNIT - II

Relational data Model and Language: Relational data model concepts, integrity constraints: entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra.
Introduction to SQL: Characteristics of SQL, Advantage of SQL, SQL data types and literals. Types of SQL commands. SQL operators and their procedure. Tables, views and indexes. Queries and sub queries. Aggregate functions. Insert, update and delete operations. Joins, Unions, Intersection, Minus, Cursors in SQL.

UNIT - III

Normalization: Functional dependencies, normal forms, first, second, third normal forms, BCNF, inclusion dependences, loss less join decompositions, normalization using FD, MVD, and JDs, alternative approaches to database design.

UNIT - IV


UNIT - V

Concurrent Control Techniques: Concurrency control, locking Techniques for concurrency control, Time stamping protocols for concurrency control, validation based protocol, multiple granularity, Multi version schemes, Recovery with concurrent transaction.

TEXT BOOK

REFERENCES
4. Date C J, “An Introduction To Database System”, Addision Wesley
T146 – COMPUTER ORGANIZATION

Lecture : 4 Periods/week  
Internal Marks : 25

Tutorial  
External Marks : 75

Credits : 4  
External Examination : 3 Hrs

UNIT - I

Register Transfer Language And Microoperations: Register Transfer language, register Transfer Bus and memory transfers, Arithmetic Microoperations, logic micro operations, shift micro operations, Arithmetic logic shift unit.


UNIT - II

Micro Programmed Control: Control memory, Address sequencing, microprogram example, design of control unit Hard wired control. Micro programmed control


UNIT - III

Pipelining And Vector Processing: parallel processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC pipeline, Vector Processing


UNIT IV

Memory Organization: Memory Hierarchy, Main Memory, Auxiliary Memory. Associative Memory Cache Memory, Virtual Memory

UNIT V

INPUT-OUTPUT ORGANIZATION : Peripheral Devices, Input-Output Interface, Asynchronous data transfer Modes of Transfer, Priority Interrupt, Direct memory Access, Input –Output Processor (IOP) Serial communication

TEXT BOOK


REFERENCES

   Fundamentals or Computer Organization and Design, - Sivaraama Dandamudi
T267 – OPERATING SYSTEMS

Lecture : 4 Periods/week Internal Marks : 25
Tutorial : External Marks : 75
Credits : 4 External Examination : 3 Hrs

UNIT - I


UNIT - II


UNIT - III


UNIT - IV

Memory Management Strategies- Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation. Virtual Memory Management- Demand Paging, Page Replacement, Allocation of Frames, Thrashing, Memory-Mapped Files, Allocating Kernel Memory

UNIT - V


TEXT BOOK


REFERENCES

T226 – INTERNET PROGRAMMING

<table>
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UNIT - I

Java Language: History of Java, data types, variables and arrays, operators, control statements, type conversion and casting, simple java program, classes, objects, constructors, methods, access control, String handling, Wrapper classes, I/O basics.

UNIT - II

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 and abstract classes. Exploring packages – Java.io, java.util. Exception handling: Concepts of exception handling, benefits of exception handling, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes.

UNIT - III

Collections Framework: Overview, collection interfaces, collection classes, accessing collections, maps
multithreading: Differences between multi threading and multitasking, thread life cycle, creating threads, synchronizing threads, daemon threads, thread groups.
Event Handling: Events, Events handling mechanisms, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, inner classes.

UNIT - IV

Applets: Concepts of Applets, differences between applets and applications, life cycle of an applet, creating applets, passing parameters to applets. Working with windows, graphics and text: Component, container, panel, window, frame, canvas, graphics. AWT controls, layout managers and menus: user interface components- labels, button, canvas, scrollbars, text components, check box, check box groups, choices controls, lists, scrollbar, dialogboxes, menubars and menu, layout managers – border, grid, flow, card.

UNIT - V

Networking – Basics of network programming, addresses, ports, sockets, simple client server program, multiple clients, Java .net package, Packages – java.util.
TEXT BOOK

Java; the complete reference, 5th editon, Herbert schildt, TMH.

REFERENCES

2. Learning Java, 'Patrick Niemeyer & Jonathan Knudsen(O'Reilly)
3. Java – In a nutshell – A desktop quick reference, David Flanagan(O'REILLY)
4. Java Examples In a nutshell – A Tutorial companion to java in a nutshell (O'REILLY)
T308 – SOFTWARE ENGINEERING

Lecture : 4 Periods/week
Internal Marks : 25

Tutorial
External Marks : 75

Credits : 4
External Examination : 3 Hrs

UNIT - I

Introduction to software engineering: The evolving role of Software, software, changing nature of software, legacy software, software myths
Software process: layered technology, process frame work, CMMI, process patterns, assessment, personal and team process models, process technology, product and process

UNIT - II

Process models: Prescriptive models, water fall model, incremenental, evolutionary and specialized process models, unified process
Software engineering practice: communication practices, planning practices, modeling practices, construction practice and deployment.

UNIT - III

Requirements Engineering: A bridge to design and construction, RE tasks, initiating the RE process, Eliciting Requirements, developing use cases, building the analysis models, negotiating and validating requirements.
Building the analysis model: requirements analysis, analysis modeling approaches, data modeling concepts, OOA, scenario based modeling, flow rated modeling, class based modeling, creating a behavior model

UNIT - IV

Design Engineering: Design within the context of software engineering, design process and software quality, design concepts, design model, pattern based software design
Creating an architectural design: software architecture, data design, architectural styles and patterns, architectural design

UNIT - V

Testing Strategies: A strategic to software testing, strategic issues, test strategies for conventional software, object oriented software, validation testing, system testing, the art of debugging Testing tactics: software testing fundamentals, white box testing: basis path testing, control structure testing. Black box testing, OO testing methods

TEXT BOOK


REFERENCES

UNIT - I

Electrical Circuits
Basic Definitions, Types of elements, Ohms law, Resistive networks, Kirchhoff’s laws, Inductive networks, Capacitive networks, series and parallel circuits and star-delta and delta star transformations

UNIT - II

Magnetic Circuits

UNIT - III

Synchronous Machine and 3 phase Induction motor

UNIT - IV

Transformers
Principle of operation of single phase transformers, Ideal Transformer, Practical transformers, phasor diagram, emf equation, losses, efficiency and regulation.

UNIT - V

Electrical And Electronics Measuring Instruments

TEXT BOOKS
REFERENCES

3. Network Analysis by Vanvalkenburg, PHI
P817 – DATABASE MANAGEMENT SYSTEMS LAB.

Lab : 3 Periods/week
Credits : 2

Internal Marks : 25
External Marks : 75

External Examination : 3 Hrs

OBJECTIVE

To teach students database handling, datamanipulation and data processing skills through SQL & PL/SQL, this will help them to develop data centric computer applications.

The following topics need to be covered in the Laboratory Sessions:

- **SQL**
  - Introduction of SQL
  - DDL, DML, DTL
  - Basic Data Types
  - Commands to create table
  - Constraint definition
  - Commands for table handling
  - Alter table, Drop table,
  - Insert, Update, Delete Commands for record handling
  - Select with operators like arithmetic, comparison, logical Query Expression operators
  - Ordering the records with order by grouping the records
  - SQL functions
    - Date, Numeric, Character, Conversion Functions
    - Group functions : avg, max, min, sum, count
  - Set operations : Union, Union all, intersect, minus
  - Join concept : Simple, equi, non equi, self, outer join
  - Query & sub queries
  - View Introduction, create, update, drop commands

- **PL/SQL**
  - Advantages of PL/SQL
  - Support of SQL
  - Executing PL/SQL
  - PL/SQL character set & Data Types
  - Character, row, rowed, Boolean, binary integer, number Variable, constant
  - PL/SQL blocks Attribute
  - % TYPE, %ROWTYPE, operators, function comparison numeric, character, date
  - Control structures
    - Condition – if
    - Interactive- loop, for, while
    - Sequential – goto
  - Database Triggers
    - Definition, syntax, parts of triggers
    - Types of triggers, enabling & disabling triggers
  - Sub programs
    - Definition & Features
    - Cursors, Procedures and Functions
      - Definition & implementation
1. Write a java program using Abstract class?
2. Write a java program using Inheritance?
3. Write an applet program to handle Mouse events?
4. Write a java program to reverse the given number?
5. Write an applet program using Graphics?
6. Write a java program to implement Dynamic method dispatch?
7. Write an applet program using Key events?
8. Write a java program to create Multiple Threads?
9. Write a java program to create user information system using Swings?
10. Write a java program by using Exception handling mechanism?
11. Write a java program by using super key word?
12. Write a java program by using final variables and final methods?
13. Write a java program by using AWT components?
14. Write an applet program to display information an applet?
15. Write a java program to find the sum of the numbers by using Command line arguments?
16. Write a java program to generate Fibonacci series?
17. Write an applet program to handle Mouse events?
18. Write a java program to demonstrate Packages?
19. Write a java program by using Swing components?
20. Write a java program to implement Over Loading?
21. Write an Applet program using Graphics?
22. Write a java program to implement Overriding?
23. Write a java program to pass parameters to Applet?
24. Write a java program using Constructors.?
25. Write an applet program using Key events?
26. Write a java program to find the roots of a quadratic equation?
27. Write a java program to implement Multiple inheritance?
28. Write a java program length and capacity program?
29. Write a java program to find the factorial of a given number using recursion?
30. Write a java program to find out area of a circle.?
V-SEMESTER
T156 – DESIGN AND ANALYSIS OF ALGORITHMS

Lecture : 4 Periods/week
Tutorial : 1
Credits : 5

Internal Marks : 25
External Marks : 75
External Examination : 3 Hrs

UNIT - I


UNIT - II

**The Greedy Method** - Knapsack Problem, Tree vertex splitting, Job sequencing, Minimum-cost spanning trees, Kruskal’s algorithm, Optimal storage on tapes, Optimal merge pattern, Single source shortest paths.

UNIT - III

**Dynamic Programming** - General method, Multistage graph, All pairs shortest path, Single-source shortest path, Optimal Binary search trees, String Editing, 0/1 Knapsack, Reliability design, the traveling salesman problem, Flow shop scheduling.

UNIT - IV

**Basic traversal & search techniques** - Techniques for binary trees, techniques for graphs, connected components & spanning trees, Bi-connected components & DFS. **Back tracking** - The General Method, The 8-Queens Problem, Sum of subsets, Graph coloring, Hamiltonian cycle, Knapsack problem.

UNIT - V

**Branch and Bound** - The method, 0/1 Knapsack problem, Traveling salesperson, Efficiency considerations. **NP hard and NP Complete Problems** - Basic concepts, Cook’s Theorem, NP-Hard Graph problems, NP-Hard Scheduling problem, some simplified NP-Hard problems.

**TEXT BOOK**


**REFERENCES**

UNIT - I

Fundamentals, Introduction to Finite Automata, finite automaton model, acceptance of strings, and languages, deterministic finite automaton and non deterministic finite automaton, transition diagrams, NFA with $\varepsilon$-transitions - Significance, acceptance of languages. Conversions and Equivalence: Equivalence between NFA with and without $\varepsilon$-transitions, NFA to DFA conversion, minimization of FSM, equivalence between two FSM's, Finite Automata with output- Moore and Melay machines.

UNIT - II

Regular Languages: Regular sets, regular expressions, identity rules, Constructing finite Automata for a given regular expressions, Conversion of Finite Automata to Regular expressions. Pumping lemma of regular sets, closure properties of regular sets.

UNIT - III


UNIT - IV


UNIT - V

TEXT BOOKS

1. "Introduction to Automata Theory Languages and Computation". Hopcroft H.E. and Ullman J. D. Pearson Education

REFERENCES

1. Introduction to languages and the Theory of Computation, John C Martin, TMH
T265 – OBJECT ORIENTED ANALYSIS AND DESIGN

Lecture : 4 Periods/week Internal Marks : 25
Tutorial : External Marks : 75
Credits : 4 External Examination : 3 Hrs

UNIT - I

Introduction to UML: Importance of modelling, principles of modelling, object oriented

UNIT - II

Basic Structural Modelling: Classes, Relationships, common Mechanisms, and diagrams.
Advanced Structural Modelling: Advanced classes, advanced relationships, Interfaces,
Types and Roles, Packages.

UNIT - III

Class & Object Diagrams: Terms, concepts, modelling techniques for Class & Object
Diagrams.

UNIT - IV

Basic Behavioural Modelling-I: Interactions, Interaction diagrams Use cases, Use case
Diagrams, Activity Diagrams

UNIT - V

Advanced Behavioural Modelling: Events and signals, state machines, processes and
Threads, time and space, state chart diagrams.
Architectural Modelling: Component, Deployment, Component diagrams and Deployment
diagrams.

TEXT BOOK

1. Grady Booch, James Rumbaugh, Ivar Jacobson: The Unified Modelling Language

REFERENCES

   Education.
2. Pascal Roques: Modelling Software Systems Using UML2, WILEY- Dreamtech India
   Pvt. Ltd.
4. Appling UML and Patterns: An introduction to Object – Oriented Analysis and Design
   and Unified Process, Craig Larman, Pearson Education.
T284 – PRINCIPLES OF PROGRAMMING LANGUAGES

Lecture : 4 Periods/week       Internal Marks : 25
Tutorial :                   External Marks : 75
Credits : 4                  External Examination : 3 Hrs

UNIT - I


UNIT - II

Syntax and Semantics: general Problem of describing Syntax and Semantics, formal methods of describing syntax - BNF, EBNF for common programming languages features, parse trees, ambiguous grammars, attribute grammars, denotational semantics and axiomatic semantics for common programming language features.

UNIT - III

Data types: Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization. Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT, object oriented programming in small talk, C++, Java, C#, Ada 95

UNIT - IV

Expressions and Statements: Arithmetic relational and Boolean expressions, Short circuit evaluation mixed mode assignment, Assignment Statements, Control Structures – Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

UNIT - V

Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic subprograms, parameters that are sub-program names, design issues for functions user defined overloaded operators, co routines. Concurrency: Subprogram level concurrency, semaphores, monitors, massage passing, Java threads, C# threads.

TEXT BOOK

Concepts of Programming Languages Robert .W. Sebesta 6/e, Pearson Education.

REFERENCES

Programming languages –Ghezzi, 3/e, John Wiley
Programming Languages Design and Implementation – Pratt and Zeikowitz,
Fourth EditionPHI/Pearson Education
Programming languages –Watt, Wiley Dreamtech
T254 – MICROPROCESSOR AND INTERFACING

<table>
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UNIT-I

Architecture of 8086 Microprocessor, Special functions of General purpose registers. 8086 flag register and function of 8086 Flags, Addressing modes of 8086. Instruction set of 8086. Assembler directives, simple programs, procedures, and macros, Assembly language programs involving logical, Branch & Call instructions, sorting, evaluation of arithmetic expressions, string manipulation.

UNIT-II

Pin diagram of 8086-Minimum mode and maximum mode of operation, Timing diagram, Memory interfacing to 8086 (Static RAM & EPROM), Need for DMA. DMA data transfer Method, Interfacing with 8237/8257.

UNIT-III

8255 PPI – various modes of operation and interfacing to 8086, Interfacing Keyboard, Displays, 8279 Stepper Motor and actuators, D/A and A/D converter interfacing.

UNIT-IV


UNIT-V

Introduction to 80286, Salient Features of 80386, Real and Protected Mode Segmentation & Paging, Salient Features of Pentium, Branch Prediction. 8051 Microcontroller Architecture, Register set of 8051, Modes of timer operation, Serial port operation, Interrupt structure of 8051, Memory and I/O interfacing of 8051.

TEXT BOOKS


REFERENCES

T314 – SOFTWARE TESTING METHODOLOGIES

Lecture : 4 Periods/week
Internal Marks : 25
Tutorial :
External Marks : 75
Credits : 4
External Examination : 3 Hrs

UNIT - I

Introduction: Purpose of Testing Dichotomies, model for testing, consequences of bugs, Taxonomy of bugs

UNIT - II

Flow Graphs and Path testing: Basic concepts, Predicates, Path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.
Transaction flow testing: Transaction flows, transaction flow testing techniques. Data flow testing: Basics of Data flow testing, strategies in dataflow testing, application of dataflow testing

UNIT - III

Domain Testing: Domains and paths, Nice and ugly domains, domain testing, domains and interfaces testing, domains and testability

UNIT - IV

Paths, path products and Regular expressions: Path products & Path expression, reduction procedure, applications, regular expressions and flow anomaly detection. Logic Based Testing: Overview, decision tables, path expressions, kv charts, specifications

UNIT - V

State, state graphs and Transition Testing: State Graphs, good and bad state graphs, state testing, testability tips. Graph matrices and Application: Motivational overview, matrix of graph relations, power of a matrix, node, node reduction algorithm, building tools.

TEXT BOOK


REFERENCES

2. Renu Rajani Pradeep Oak; “Software Testing, Effective methods, Tools and Techniques”; TMHI
P860 – OBJECT ORIENTED ANALYSIS AND DESIGN LAB.

<table>
<thead>
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The student should take up the following case studies which are mentioned below, and Model it in different views i.e. Use case view, logical view, component view, Deployment view, Database design, forward and Reverse Engineering, and Generation of documentation of the project.

1. Unified Library application
2. Automatic Teller Machine (ATM)
3. Student Admission Procedure
4. Online Book Shopping
5. Hospital Management System
6. Cellular Network
P851 – MICROPROCESSOR AND INTERFACING LAB.

Lab. : 3 Periods/week  |  Internal Marks : 25

Credits : 2  |  External Marks : 75

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Cycle–I (Introduction to 8086 Programming)

1. Write 8086 program to implement Multi byte addition?
2. Write 8086 program to implement Multi byte SuCSractiion?
3. Write 8086 program to implement Multiplication (unsigned & signed)?
4. Write 8086 program to implement division (unsigned & signed)?
5. Write 8086 program to implement addition of two ASCII numbers?
6. Write 8086 program to implement SuCSractiion of two ASCII numbers?
7. Write 8086 program to implement Multi byte SuCSractiion?
8. Write 8086 program to implement Multi byte SuCSractiion?

Cycle–II (Introduction to MASM and TASM)

1. Write an ALP to implement Display string on the monitor?
2. Write an ALP to implement Move Block of data from one location to another location?
3. Write an ALP to implement String comparison (Pass word checking)?
4. Write an ALP to implement read a character from key board with or without echo?
5. Write an ALP to implement Reverse the string?
6. Write an ALP to implement BCD to HEX conversion using procedure?
7. Write an ALP to implement HEX to BCD conversion?
8. Write an ALP to implement sorting?
9. Write an ALP to implement Factorial using recursive procedure?

Cycle–III (Introduction to Interfacing)

1. Write 8086 program to interface 8255 PPI, generate saw tooth wave, Triangular wave and square wave using DAC interfacing?
2. Write 8086 program to interface 8279 key board display?
3. Write 8086 program to interface 8253 & 8251 USART?
4. Write 8086 program to implement Multi byte addition (8259 Interrupt Controller)?

Cycle–IV (Introduction to 8051 Microcontroller)

1. Write 8051 program to implement Multi byte addition?
2. Write 8051 program to implement two 32-bit numbers?
3. Write 8051 program to implement Multiplication?
4. Write 8051 program to implement division operation?
5. Write 8051 program to implement Byte Checking?
6. Write 8051 program to find the sum of the elements in an Array?
7. Write 8051 program to implement writing to parallel port?
T145 – COMPUTER NETWORKS

Lecture: 4 Periods/week  Internal Marks: 25
Tutorial:  
Credits: 4  External Marks: 75
  
External Examination: 3 Hrs

UNIT - I


UNIT - II

Data link layer: design issues- framing, error detection and correction, CRC, Elementary data link protocols- sliding window protocols. Medium Access Control Sub layer: Channel allocation problem- multiple access protocols- Ethernet- Data link layer switching.

UNIT - III

Network layer: Network layer design issues- Routing algorithms- congestion control algorithms-Quality of service- Internetworking- network layer in the Internet.

UNIT - IV

Transport layer: Transport service- Elements of transport protocols- Internet transport protocols: TCP & UDP.

UNIT - V


TEXT BOOK


REFERENCES

UNIT - I

Overview of Compilation: Phases of Compilation – Lexical Analysis, pass and Phases of translation, interpretation, bootstrapping, data structures in compilation – LEX lexical analyzer generator

UNIT - II

Context Free grammars: Context free grammars, derivation, parse trees, ambiguity grammars

Top down Parsing: Top down parsing – Backtracking, LL (1), recursive descent parsing, Predictive parsing, Preprocessing steps required for predictive parsing.

UNIT - III

Bottom up parsing: Shift Reduce parsing, LR and LALR parsing, Error recovery in parsing, handling ambiguous grammar, YACC – automatic parser generator.

UNIT - IV

Semantic analysis: Syntax directed translation, S-attributed and L-attributed grammars, Type checker. Intermediate code – abstract syntax tree, polish notation and three address codes, translation of simple statements and control flow statements

Run time storage: Storage organization, storage allocation strategies scope access to now local names, parameters, language facilities for dynamics storage allocation.

UNIT - V

Code optimization: Consideration for Optimization, Scope of Optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation.


TEXT BOOK

Compilers Principles, Techniques and Tools Aho, Ullman, Ravisethi, Pearson Education.

REFERENCES

Modern Compiler Construction in C, Andrew W.Appel Cambridge University Press.
Compiler Construction, LOUDEN, Thomson.
T340 – WEB TECHNOLOGIES

Lecture : 4 Periods/week Internal Marks : 25
Tutorial : 1 External Marks : 75
Credits : 4 External Examination : 3 Hrs

UNIT - I

HTML Common tags: List, Tables, Images, links, forms, Frames; Cascading Style sheets; Introduction to Java Script, Objects in Java Script, Dynamic HTML with Java Script

UNIT - II


UNIT - III


UNIT - IV

Introduction to JSP: Introduction to JSP, Components of JSP, Implicit objects. Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data between JSP.

UNIT - V


TEXT BOOK

Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech.(UNITS-1,2,3,4)

REFERENCES

1. Jakarta Struts Cookbook , Bill Siggeklow, S P D O’Reilly (UNIT-5)
2. Programming world wide web-Sebesta, Pearson
3. Core SERVLETS AND JAVASERVER 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
UNIT - I

Linux Shell Command Set: Navigating File Systems, Handling Files, Regular Expressions, Process Commands, VI Editor.

UNIT - II

Inter-Process Communication: Introduction to inter-process communication, system V IPC, Pipes, FIFO, Message queues, Sockets.

UNIT – III

Linux Internals: Linux Kernel Structure, System Calls, File Sub-System, Process Sub-System, Linux Signals, Clock & Timers, Memory Management.

UNIT – IV

Network Implementation: TCP Sokets-socket, connect, bind, listen, Read, write, accept, fork, UDP – sockets, Socket, bind sendto, recvfrom functions.
Modules and Debugging: What are Modules?, Implementation in the Kernel, What can be Implemented as a Module?, Parameter Passing, An Example Module, Debugging.

UNIT – V

Multi-Processing: The Intel Multi-processor Specification, Problems with Multi-processor Systems, Changes to the Kernel, Compiling Linux SMP

TEXT BOOK


REFERENCES

T312 – SOFTWARE REQUIREMENTS AND ESTIMATION

Lecture : 4 Periods/week  Internal Marks : 25
Tutorial :  Externl Marks : 75
Credits : 4  Externl Examination : 3 Hrs

UNIT - I


UNIT - II


UNIT - III


UNIT - IV


UNIT - V


TEXT BOOKS

2. Software Requirements and Estimation, Rajesh Naik, Swapna Kishore, TMH
REFERENCES

2. Managing Software Requirements A Use Case Approach, 2/e, Dean, Don, Addison-Wesley, 2003
T337 – VISUAL PROGRAMMING

Lecture : 4 Periods/week  Internal Marks : 25
Tutorial :  External Marks : 75
Credits : 4  External Examination : 3 Hrs

UNIT - I


UNIT - II


UNIT - III


UNIT - IV

ACTIVEX AND OBJECT LINKING AND EMBEDDING (OLE): ActiveX controls Vs. Ordinary Windows Controls – Installing ActiveX controls – Calendar Control – ActiveX control container programming – create ActiveX control at runtime – Component Object Model (COM) – containment and aggregation Vs. inheritance – OLE drag and drop – OLE embedded component and containers – sample applications

UNIT - V


TEXT BOOK


REFERENCES

T274 – PARALLEL ALGORITHMS

Lecture : 4 Periods/week  Internal Marks : 25
Tutorial : External Marks : 75
Credits : 4  External Examination : 3 Hrs

UNIT - I


UNIT - II


UNIT - III

Searching, Merging, and Sorting: Searching, Merging, Sorting, Sorting Networks, Selection.

UNIT - IV


UNIT - V

Realistic Models of Parallel Computation: Bulk Synchronous Parallel (BSP), LogP, Shared-Memory (SMP), Clusters of SMPs, Communication Primitives, Sorting, 2D FFT.

TEXT BOOK


REFERENCES

T144 – COMPUTER GRAPHICS

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UNIT - I


UNIT - II


UNIT - III


UNIT - IV

Two Dimensional Viewing: The viewing Pipeline-Viewing Coordinate Reference Frame-Window-to-Viewport Coordinate Transformation-Two Dimensional Viewing Functions-Clipping Operations-Point Clipping-Line Clipping-Polygon Clipping.

UNIT - V


TEXT BOOK


REFERENCES

1. David F. Rogers; “Procedural Elements for Computer Graphics”; TMH
T290 – PROFESSIONAL ETHICS

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Internal Marks</th>
<th>25</th>
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<tr>
<td>Credits</td>
<td>External Examination</td>
<td>3 Hrs</td>
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</table>

UNIT - I

ENGINEERING ETHICS
Senses of 'Engineering Ethics' variety of moral issued types of inquiry moral dilemmas moral autonomy Kohlberg's theory Gilligan's theory consensus and controversy – Models of Professional Roles theories about right action Selfinterest customs and religion uses of ethical theories.

UNIT - II

HUMAN VALUES

UNIT - III

ENGINEERING AS SOCIAL EXPERIMENTATION
Engineering as experimentation engineers as responsible experimenters codes of ethics a balanced outlook on law the challenger case study

UNIT - IV

SAFETY, RESPONSIBILITIES AND RIGHTS
Safety and risk assessment of safety and risk risk benefit analysis and reducing risk the three mile island and chernobyl case studies. Collegiality and loyalty respect for authority collective bargaining confidentiality conflicts of interest occupational crime professional rights employee rights Intellectual Property Rights (IPR) discrimination.

UNIT - V

GLOBAL ISSUES
Multinational corporations Environmental ethics computer ethics weapons development engineers as managers consulting engineers engineers as expert witnesses and advisors moral leaderships sample code of Ethics (Specific to a particular Engineering Discipline).

TEXT BOOKS

REFERENCES
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, " Engineering Ethics – Concepts and Cases", Wadsworth Thompson Leatning, United States, 2000 (Indian Reprint now available)
### P881 – WEB TECHNOLOGIES LAB.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Program(s)</th>
</tr>
</thead>
</table>
| 1      | Design the following static webpages required for an online book store website.  
Homepage  
Login Page  
Catalogue Page |
| 2      | Design the following static webpages required for an online book store website.  
Cart Page  
Registration Page |
| 3      | Design a webpage using CSS which includes the following styles.  
Using different font, styles  
Set a background image for both page and single elements on the page  
Control the background repetition of image with background repeat property  
Define styles for link as visited, active, hover & link  
Work with layers  
Add a customized cursor |
| 4      | Write a JavaScript to validate the fields of a registration page. |
| 5      | Create an XML document for maintaining a CD catalog  
Display XML document data using HTML  
Display XML data using XSL |
| 6      | Write a program to create a Java Bean for user login management component |
| 7      | Write program to Install Apache Tomcat Web Server and deploy a static website & Access it.  
Install Apache Tomcat Server on port number 8080  
Deploy html pages in a webserver  
Access static website from a webserver |
| 8      | Write a program to create a Servlet to AUTHENTICATE user details |
| 9      | Write a program to implement session management concept in Servlets |
| 10     | Write a program to access a database using JDBC & Servlets |
| 11     | Write a Program to print multiplication table for any number upto required level using JSP  
Write a program to display user credentials using `useBean` tag of JSP |
P848 – LINUX INTERNALS LAB.

Lab. : 3 Periods/week Internal Marks : 25
Tutorial : External Marks : 75
Credits : 2 External Examination : 3 Hrs

----------------------------------------------

**Cycle 1**

Session-1
a)Log into the system
b)Use vi editor to create a file called myfile.txt which contains some text.
c)Correct typing errors during creation.
d)Save the file
e)Logout of the system

Session-2
a)Log into the system
b)Open the file created in session 1
c)Add some text
d)Change some text
e)Delete some text
f)Save the Changes
g)Logout of the system

Session-3
Practicing the commands PATH, man, echo, printf, script, passwd, uname, who, date, stty, pwd, cd, mkdir, rmdir, ls, cp, mv, rm, cat, more, wc, lp, od, tar, gzip and other commands.

**Cycle 2**

Session-1
a)Log into the system
b)Use the cat command to create a file containing the following data. Call it mytable use tabs to separate the fields.
   1425    Ravi    15.65
   4320    Ramu    26.27
   6830    Sita    36.15
   1450    Raju    21.86

c)Use the cat command to display the file, mytable.
d)Use the vi command to correct any errors in the file, mytable.
e)Use the sort command to sort the file mytable according to the first field. Call the sorted file mytable (same name)
f)Print the file mytable
g)Use the cut and paste commands to swap fields 2 and 3 of mytable. Call it mytable (same name)
h)Print the new file, mytable
i)Logout of the system.

Session-2
Practicing the commands unlink, du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp, telnet, rlogin

**Cycle 3**

Session-1
Practicing the commands
tail, head, nl, uniq, tee, pg, comm, cmp, diff, tr, cpio.

Session-2
a)Login to the system
b)Use the appropriate command to determine your login shell
c) Use the /etc/passwd file to verify the result of step b.
d) Use the who command and redirect the result to a file called myfile1. Use the more command to see the contents of myfile1.
e) Use the date and who commands in sequence (in one line) such that the output of date will display on the screen and the output of who will be redirected to a file called myfile2. Use the more command to check the contents of myfile2.

2) Pipe your/etc/passwd file to awk, and print out the home directory of each user.

**Cycle 4**

a) Develop an interactive grep script that asks for a word and a file name and then tells how many lines contain that word.
b) Write a sed command that deletes the first character in each line in a file.
c) Write a sed command that deletes the character before the last character in each line in a file.
d) Write a sed command that swaps the first and second words in each line in a file.

**Cycle 5**

a) Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else.
b) Write a shell script that accepts one or more file name as arguments and converts all of them to uppercase, provided they exist in the current directory.

**Cycle 6**

a) Write a shell script that determines the period for which a specified user is working on the system.
b) Write a shell script that accepts a file name starting and ending line numbers as arguments and displays all the lines between the given line numbers.

**Cycle 7**

a) Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
b) Write a shell script that computes the gross salary of an employee according to the following rules:
   i) If basic salary is < 1500 then HRA = 10% of the basic and DA = 90% of the basic.
   ii) If basic salary is >= 1500 then HRA = Rs 500 and DA = 98% of the basic.
   The basic salary is entered interactively through the key board.

**Cycle 8**

a) Write a shell script that accepts two integers as its arguments and computes the value of first number raised to the power of the second number.
b) Write an interactive file-handling shell program. Let it offer the user the choice of copying, removing, renaming, or linking files. Once the user has made a choice, have the program ask the user for the necessary information, such as the file name, new name and so on.

**Cycle 9**

a) Write shell script that takes a login name as command – line argument and reports when that person logs in.
b) Write a shell script which receives two file names as arguments. It should check whether the two file contents are same or not. If they are same then second file should be deleted.

**Cycle 10**

a) Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
b) Develop an interactive script that ask for a word and a file name and then tells how many times that word occurred in the file.
c) Write a shell script to perform the following string operations:
   i) To extract a sub-string from a given string.
   ii) To find the length of a given string.
T223 – INFORMATION SECURITY

Lecture : 4 Periods/week  Internal Marks : 25
Tutorial : 1  External Marks : 75
Credits : 4  External Examination : 3 Hrs

UNIT - I

Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs Conventional Encryption Principles, Conventional encryption algorithms(DES, Triple DES), cipher block modes of operation(CBC,CFB), location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC.

UNIT - II

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

UNIT - III

Email privacy: Pretty Good Privacy (PGP) and S/MIME. IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations

UNIT - IV

Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).

UNIT - V

Intruders, Viruses and related threats. Firewall Design principles, Trusted Systems

TEXT BOOK


REFERENCES

4. Introduction to Cryptography, Buchmann, Springer.
T152 – DATA MINING AND DATA WAREHOUSING

Lecture : 4 Periods/week Internal Marks : 25
Tutorial : External Marks : 75
Credits : 4 External Examination : 3 Hrs

UNIT - I

Introduction, Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Implementation, Further Development, Data Warehousing to Data Mining

UNIT - II

Why Preprocessing, Cleaning, Integration, Transformation, Reduction, Discretization, Concept Hierarchy Generation, Data Mining Primitives, Query Language, Graphical User Interfaces, Architectures, Concept Description, Data Generalization, Characterizations, Class Comparisons, Descriptive Statistical Measures

UNIT - III

Association Rule Mining, Single-Dimensional Boolean Association Rules from Transactional Databases, Multi-Level Association Rules from Transaction Databases

UNIT - IV

Classification and Prediction, Issues, Decision Tree Induction, Bayesian Classification, Association Rule Based, Other Classification Methods, Prediction, Classifier Accuracy, Cluster Analysis, Types of data, Categorisation of methods, Partitioning methods, Outlier Analysis.

UNIT - V

Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Databases, Multimedia Databases, Time Series and Sequence Data, Text Databases, World Wide Web, Applications and Trends in Data Mining

TEXTBOOK


REFERENCES

### T258 – MOBILE COMMUNICATIONS

<table>
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**UNIT - I**


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**UNIT - II**


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**UNIT - III**


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**UNIT - IV**


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**UNIT - V**

Recent Advances: Ultra Wide Band Radio Communication (UWB), Wireless Fidelity Systems, Optical Wireless Networks, Multimode 802.11.

---

**TEXT BOOK**


---

**REFERENCES**

1. Stefano Basagni, Marco Conti, Silvia Giordano, Ivan Stoimenovic, "Mobile ad hoc networking", IEEE Press, Wiley InterScience, 2004
T310 – SOFTWARE PROJECT MANAGEMENT

Lecture : 4 Periods/week  
Internal Marks : 25  
Tutorial : 
External Marks : 75  
Credits : 4  
External Examination : 3 Hrs

UNIT - I


UNIT - II


UNIT - III

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. Use of Software (Microsoft Project) to Assist in Project Planning Activities

UNIT - IV


UNIT - V


TEXT BOOK

REFERENCES

2. Software Project Management, Joel Henry, Pearson Education.
T101 – ADVANCED COMPUTER ARCHITECTURE

Lecture : 4 Periods/week Internal Marks : 25
Tutorial : External Marks : 75
Credits : 4 External Examination : 3 Hrs

UNIT- I
Fundamentals of computer design, technology trends, cost, measuring and reporting performance. Quantitative principles of computer design.

UNIT- II
Instruction set principles and examples – classifying instruction set – memory addressing type and size of operands – addressing modes for signal processing – operations in the instruction set – instructions for control Flow – encoding an instruction set – the role of compiler

UNIT- III

UNIT- IV
Memory hierarchy design – cache performance – reducing cache misses penalty and miss rate – virtual memory – protection and examples of VM.

UNIT- V
Multiprocessors and thread level parallelism – symmetric shared memory architectures – distributed shared memory – Synchronization – multi threading.

TEXT BOOK
Computer Architecture A quantitative approach 3rd edition
John L. Hennessy & David A. Patterson Morgan Kufmann (An Imprint of Elsevier)

REFERENCES
2. Parallel Computer Architecture, A Hardware / Software Approach, David E. Culler, Jaswinder Pal Singh with Anoop Gupta, Elsevier
T303 – SENSOR NETWORKS

<table>
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UNIT - I


UNIT - II

Motivation for a Specialized MAC (Hidden and Exposed Terminals, Near and Far Terminals), SDMA, FDMA, TDMA, CDMA. MAC Protocols for GSM, Wireless LAN (IEEE802.11), Collision Avoidance (MACA, MACAW) Protocols.

UNIT - III


UNIT - IV


UNIT - V

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.

Text Books

1. Mobile Communications, Jochen Schiller, Addison-Wesley, Second Edition, 2004 (units -1,2,3)

REFERENCES

UNIT - I


UNIT - II

Concepts for Object Oriented Database: Overview, Object identity, Structure and Type Constructors, Encapsulation of Operations, Methods and Persistence. Type Hierarchies and Inheritance, Complex Objects. Object database standards languages and design: Overview of ODMG, Object Definition Language, Object Query Language, C++ Language Binding, Object Database Conceptual Design, Examples of ODBMS.

UNIT - III


UNIT - IV


UNIT - V


TEXTBOOKS

REFERENCES

2. Raghu Ramakrishnan Gehrke, 'Database Management Systems', PHI.
T210 – GRID COMPUTING

Lecture : 4 Periods/week  Internal Marks : 25
Tutorial :  External Marks : 75
Credits : 4  External Examination : 3 Hrs

UNIT - I

Introduction: Early Grid Activities, Current Grid Activities, Grid Business Areas, Grid Applications, Definition, Scope of Grid Computing

UNIT - II

Grid Computing Initiatives: Grid Computing Organizations and their roles, Grid computing analogy, Grid computing road map

UNIT - III


UNIT - IV


UNIT - V


TEXT BOOK

Joshy Joseph, Craig Fallenstein, "Grid Computing", Pearson Education, New Delhi, 2004

REFERENCES

2. Ian Foster, Carl Kesselman, "The Grid2: Blueprint for a New Computing Infrastructure", Morgan Kaufman, New Delhi, 2004
T122 – ARTIFICIAL INTELLIGENCE

Lecture : 4 Periods/week  
Internal Marks : 25
Tutorial :  
External Marks : 75
Credits : 4  
External Examination : 3 Hrs

UNIT - I

Introduction: Overview of Artificial intelligence- Problems of AI, AI technique, Tic - Tac - Toe problem.
Intelligent Agents: Agents & environment, nature of environment, structure of agents, goal based agents, utility based agents, learning agents.
Problem Solving: Problems, Problem Space & search: Defining the problem as state space search, production system, problem characteristics, and issues in the design of search programs.

UNIT - II

Search techniques: Solving problems by searching: problem solving agents, searching for solutions; uniform search strategies: breadth first search, depth first search, depth limited search, bi-directional search, comparing uniform search strategies.
Heuristic search strategies: Greedy best-first search, A* search, memory bounded heuristic search, local search algorithms & optimization problems, Hill climbing search, simulated annealing search, local beam search, genetic algorithms, constraint satisfaction problems, local search for constraint satisfaction problems.

UNIT - III

Knowledge: Knowledge representation issues, representation & mapping, approaches to knowledge representation, issues in knowledge representation.
Using predicate logic: Representing simple fact in logic, representing instant & ISA relationship, computable functions & predicates, resolution, natural deduction.

UNIT - IV

Representing knowledge using rules: Procedural versus declarative knowledge, logic programming, forward versus backward reasoning, matching, control knowledge.

UNIT - V

Reasoning: Probabilistic reasoning: Representing knowledge in an uncertain domain, the semantics of Bayesian networks, Dempster-Shafer theory, Fuzzy sets & fuzzy logics.

TEXT BOOK

Artificial Intelligence, Ritch & Knight, TMH

REFERENCES

1. Artificial Intelligence A Modern Approach, Stuart Russell & Peter Norvig Pearson
2. Introduction to Artificial Intelligence & Expert Systems, Patterson, PHI
5. Artificial Intelligence, Winston, Pearson Ed.
Implementing and verifying the performance of protocols using Network Simulator 2 (ns2) and OPNET Simulator.

1. Installation of ns2 in linux
2. Installation of OPNET simulator
3. Testing ns2 working
4. Performance evaluation of wireless networks
5. Performance Evaluation 802.11
6. Performance Evaluation of AODV protocol
7. Performance Evaluation of DSDV Protocol
8. Using Directional Antennas in Wireless Communication
P876 – SOFTWARE TESTING METHODOLOGIES LAB.

Lab : 3 Periods/week
Tutorial :
Credits : 2

Internal Marks : 25
External Marks : 75
External Examination : 3 Hrs

OBJECTIVES

1. To learn to use the testing tools to carry out the functional testing, load/stress testing.

2. To learn to use the following (or similar) automated testing tools to automate testing:
   a) Win Runner/QTP for functional testing.
   b) LoadRunner for Load/Stress testing.
   c) Test Director for test management.

3. The student should take up the case study of Unified Library application which is mentioned in the theory, and Model it in different views i.e Use case view, logical view, component view, Deployment view, Database design, forward and Reverse Engineering, and Generation of documentation of the project.

4. Student has to take up another case study of his/her own interest and do the same whatever mentioned in first problem. Some of the ideas regarding case studies are given in REFERENCES which were mentioned in theory syllabus can be referred for some idea.

TEXTBOOKS


VIII-SEMESTER
T221 - INDUSTRIAL MANAGEMENT

Lecture : 4 Periods/week  |  Internal Marks : 25
Tutorial :          |  External Marks : 75
Credits : 4          |  External Examination : 3 Hrs

AIM

To make the student to understand concepts and contributions of Management, types of Organizations and also prepare them to have knowledge of several types of managements conducted in Industrial Organizations.

UNIT - I

Introduction

UNIT - II

Operations Management
Plant Location, Factors influencing location, Principles and Types of Plant Layouts-Methods of production (Job, batch and Mass Production), Work Study -Basic procedure involved in Method Study and Work Measurement.

UNIT - III

Quality and Materials Management

UNIT - IV

Human Resource Management

UNIT - V

Project Management
TEXT BOOK


REFERENCES

2. Stoner, Freeman, Gilbert, Management, 6th Ed, Pearson Education, New Delhi, 2004
3. O.P.Khana, Industrial Engineering and Management
4. L.S. Srinath, PERT & CPM
T311 – SOFTWARE QUALITY ASSURANCE

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UNIT - I


UNIT - II

Software Quality Metrics: Product Quality metrics, In-Process Quality Metrics, Metrics for Software Maintenance, Examples of Metric Programs – Software Quality metrics methodology: Establish quality requirements, Identify Software quality metrics, Implement the software quality metrics, analyze software metrics results, validate the software quality metrics – Software quality indicators

UNIT - III


UNIT - IV


UNIT - V

TEXT BOOK

Software Quality, by Mordechai BenMenachem / Garry S. Marliss, by Thomson Learning
Publication

REFERENCES

2. Testing and Quality Assurance for Component-based Software, by Gao, Tsao and
   Wu, Artech House Publishers
5. Software Testing and Continuous Quality Improvement, by William E. Lewis,
   Pearson Education Publication

HEAD

Department of Computer Science and Engineering
Lakireddy Bali Reddy College of Engineering
MYLAVARAM, Krishna (Dist) - 521 230.
T257 – MIDDLEWARE TECHNOLOGIES

Lecture : 3 Periods/week  
Internal Marks : 25  
Tutorial : 1  
External Marks : 75  
Credits : 3  
External Examination : 3 Hrs

UNIT - I


UNIT - II

CORBA with Java: Review of Java concept like RMI, RMI API, JDBC. Client/Server CORBA-style, The object web: CORBA with Java.

UNIT - III

Introducing C# and the .NET Platform; Understanding .NET Assemblies; Object –Oriented Programming with C#; Callback Interfaces, Delegates, and Events. Building c# applications: Type Reflection, Late Binding, and Attribute-Based Programming; Object Serialization and the .NET Remoting Layer; Data Access with ADO.NET; XML Web Services.

UNIT - IV

Core CORBA / Java: Two types of Client/Server invocations-static, dynamic. The static CORBA, first CORBA program, ORBlets with Applets, Dynamic CORBA-The portable count, the dynamic count multi count.
Existential CORBA: CORBA initialization protocol, CORBA activation services, CORBAIDL mapping CORBA java-to- IDL mapping, The introspective CORBA/Java object.

UNIT - V

Java Bean Component Model: Events, properties, persistency, Introspection of beans, CORBA Beans. EJBs and CORBA: Object transaction monitors CORBA OTM’s, EJB and CORBA OTM’s, EJB container frame work, Session and Entity Beans, The EJB client/server development Process The EJB container protocol, support for transaction EJB packaging EJB design Guidelines.

TEXT BOOKS

Client/Server programming with Java and CORBA Robert Orfali and Dan Harkey, John Wiley & Sons ,SPD 2nd Edition
REFERENCES

2. Distributed Computing, Principles and applications, M.L. Liu, Pearson Education
4. Client/Server Computing D T Dewire, TMH.
5. IBM Websphere Starter Kit Ron Ben Natan Ori Sasson, TMh, New Delhi
7. C# Preciessely Peter Sestoft and Henrik I. Hansen, Prentice Hall of India
8. Intoduction to C# Using .NET Pearson Education
9. C# How to program, Pearson Education
10. C# and the .NET Platform Andrew Troelsen, Apress Wiley-dreamtech, India Pvt Ltd
UNIT - I

Introduction: Importance of user Interface – definition, importance of good design, benefits of good design. A brief history of Screen design. 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 - II

Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business junctions.

UNIT - III


UNIT - IV


UNIT - V

Components – text and messages, Icons and images – Multimedia, colors – uses, problems with choosing colors.


TEXT BOOK

The essential guide to user interface design, Wilbert O Galitz, Wiley DreamaTech.

REFERENCES

1. Designing the user interface. 3rd Edition Ben Shneidermann, Pearson Education Asia.
2. Human – Computer Interaction. ALAN DIX, JANET FINCAY, GRE GORYD, ABOWD, RUSSELL BEALG, PEARSON.
T157 – DESIGN PATTERNS

Lecture: 3 Periods/week  Internal Marks: 25
Tutorial: 1  External Marks: 75
Credits: 3  External Examination: 3 Hrs

UNIT - I

Introduction: What Is a Design Pattern?, Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern.

UNIT - II


UNIT - III

Creatational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creatational Patterns.

UNIT - IV

Structural Pattern: Adapter, Bridge, Composite, Decorator, Acade, Flyweight, Proxy.

UNIT - V


TEXT BOOK

Design Patterns By Erich Gamma, Pearson Education

REFERENCES

2. Pattern’s in JAVA Vol-II By Mark Grand ,Wiley DreamTech. JAVA Enterprise Design Patterns Vol-III By Mark Grand ,WileyDreamt Head First Design Patterns By Eric Freeman-Oreilly-spd
3. Design Patterns Explained By Alan Shalloway, Pearson Education.
UNIT - I
Origins, Regulations and industry initiatives - Government, Industry

UNIT - II
Approaches to green computing - Product longevity, Algorithmic efficiency

UNIT - III
Resource allocation, Virtualization

UNIT - IV
Terminal servers, Power management, Operating system support, Power supply, Storage, Video card, Display

UNIT - V
Materials recycling, Telecommuting

TEXT BOOK

Green Computing and Green IT Best Practices on Regulations and Industry Initiatives, Virtualization, Power Management, Materials Recycling and Telecommuting by Jason Harris
T305 – SERVICE ORIENTED ARCHITECTURE

Lecture : 3 Periods/week  Internal Marks : 25
Tutorial : 1  External Marks : 75
Credits : 3  External Examination : 3 Hrs

UNIT I

UNIT II
Web services – Service descriptions – Messaging with SOAP – Message exchange Patterns – Coordination – Atomic Transactions – Business activities – Orchestration – Choreography - Service layer abstraction – Application Service Layer – Business Service Layer – Orchestration Service Layer

UNIT III

UNIT IV
SOA platform basics – SOA support in J2EE – Java API for XML-based web services (JAX-WS) – Java architecture for XML binding (JAXB) – Java API for XML Registries (JAXR) – Java API for XML based RPC (JAX-RPC) - Web Services Interoperability Technologies (WSIT) - SOA support in .NET – Common Language Runtime - ASP.NET web forms – ASP.NET web services – Web Services Enhancements (WSE)

UNIT V
WS-BPEL basics – WS-Coordination overview – WS-Choreography, WS-Policy, WSSecurity

TEXT BOOKS:

REFERENCES:
T138 – CLOUD COMPUTING

Lecture : 3 Periods/week
Tutorial : 1
Credits : 3

Internal Marks : 25
External Marks : 75
External Examination : 3 Hrs

UNIT - I

Foundations: Introduction to Cloud Computing, Migrating into a Cloud Enriching the 'Integration as a Service' Paradigm for the Cloud Era, Cloud Computing for Enterprise Applications

UNIT - II


UNIT - III


UNIT - IV


UNIT - V

Applications: Architecting Applications for the Amazon Cloud, Massively Multiplayer Online Game Hosting on Cloud Resources, Building Content Delivery Networks Using Clouds, Resource Cloud Mashups

TEXT BOOK

"Cloud Computing: Principles and Paradigms", Raj Kumar Bunya, James Bromberg, Andrej Kosciusko, Wiley, New York, USA
UNIT - I


UNIT - II

Action Script I: ActionScript Features, Object-Oriented ActionScript, Datatypes and Type Checking, Classes, Authoring an ActionScript Class Action Script II: Inheritance, Authoring an ActionScript 2.0 Subclass, Interfaces, Packages, Exceptions

UNIT - III


UNIT - IV

Lossy compression algorithm: Quantization, Transform Coding, Wavelet- Based Coding, Basic Video Compression Techniques: Introduction to video compression, video compression based on motion compensation, search for motion vectors, MPEG, Basic Audio Compression Techniques.

UNIT - V


TEXT BOOKS

1. Fundamentals of Multimedia by Ze-Nian Li and Mark S. Drew PHI/Pearson Education
2. Essentials ActionScript 2.0, Colin Moock, SPDO'REILLY.

REFERENCES

1. Digital Multimedia, Nigel chapman and jenny chapman, Wiley-Dreamtech