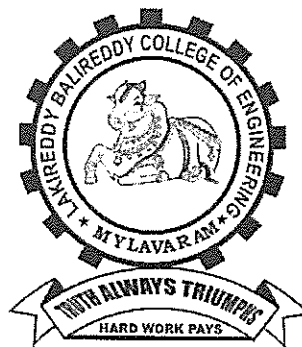


**LAKIREDDY BALIREDDY
COLLEGE OF ENGINEERING
(AUTONOMOUS)**

(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)

Code No.	Name of the Course	Scheme of Instruction			Scheme of Examination		Total	Credits
		Periods per Week			Maximum Marks			
		Lectures	Tutorial	Lab	Internal	External		
T118	Applied Mathematics - I	4	1	--	25	75	100	4
T131	C Programming	4	1	--	25	75	100	4
T197	English - I	4	--	--	25	75	100	3
T191	Engineering Chemistry	4	--	--	25	75	100	3
T195	Engineering Physics - I	4	1	---	25	75	100	4
P806	C Programming Lab	--	--	3	25	75	100	2
P830	Engineering Physics and Chemistry Lab.	--	--	3	25	75	100	2
P831	Engineering Workshop	--	--	3	25	75	100	2
TOTAL		20	03	09	200	600	800	24



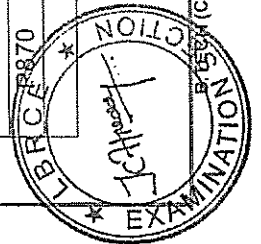
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II-SEMESTER

Code No.	Name of the Course	Scheme of Instruction			Scheme of Examination		Total	Credits
		Lectures	Periods per Week		Internal	External		
			Tutorial	Lab				
T119	Applied Mathematics - II	4	1	--	25	75	100	4
T198	English - II	3	--	--	25	75	100	3
T264	Numerical Methods	4	--	--	25	75	100	4
T153	Data Structures	4	1	--	25	75	100	5
T188	Electronics Devices and Circuits	3	--	--	25	75	100	3
P815	Data Structures Lab	--	--	3	25	75	100	2
P829	Engineering Drawing through Autocad	--	--	3	25	75	100	2
P827	Electronic Devices and Circuits using Lab View	--	--	3	25	75	100	2
P856	Mini Project - I	--	--	3	--	50	50	2
TOTAL		18	2	12	200	650	850	27

III-SEMESTER

Code No.	Name of the Course	Scheme of Instruction			Scheme of Examination		Total	Credits
		Lectures	Periods per Week		Internal	External		
			Tutorial	Lab				
T166	Discrete Mathematical Structures	4	--	--	25	75	100	4
T285	Probability and Statistics	4	--	--	25	75	100	4
T162	Digital Logic Design	4	--	--	25	75	100	4
T199	Environmental Studies	4	--	--	25	75	100	4
T266	Object oriented Programming using (C++)	4	1	--	25	75	100	4
P819	Digital Logic Design Lab	--	--	3	25	75	100	2
P861	Object oriented Programming (C++) Lab	--	--	3	25	75	100	2
P832	English Language Communication Skills Lab	--	--	3	25	75	100	2
P870	Seminar - I	--	--	2	50	--	50	2
TOTAL		20	01	11	250	600	850	28

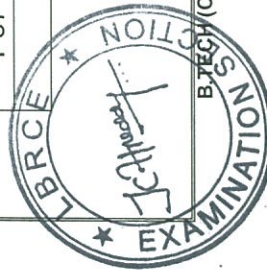


IV-SEMESTER

Code No.	Name of the Course	Scheme of Instruction			Scheme of Examination		Total	Credits
		Periods per Week			Maximum Marks			
		Lectures	Tutorial	Lab.	Internal	External		
T155	Database Management Systems	4	1	--	25	75	100	4
T146	Computer Organization	4	--	--	25	75	100	4
T267	Operating Systems	4	--	---	25	75	100	4
T226	Internet Programming	4	1	--	25	75	100	4
T308	Software Engineering	4	--	--	25	75	100	4
T127	Basic Electrical Engineering	4	--	--	25	75	100	4
P817	Database Management Systems Lab	--	--	3	25	75	100	2
P842	Internet Programming Lab	--	--	3	25	75	100	2
P857	Mini Project - II	--	--	2	25	25	50	2
	TOTAL	24	2	08	225	625	850	30

V-SEMESTER

Code No.	Name of the Course	Scheme of Instruction			Scheme of Examination		Total	Credits
		Periods per Week			Maximum Marks			
		Lectures	Tutorial	Lab.	Internal	External		
T156	Design and Analysis of Algorithms	4	1	--	25	75	100	5
T123	Automata Theory and Formal Languages	4	--	--	25	75	100	4
T265	Object Oriented Analysis and Design	4	--	--	25	75	100	4
T284	Principles of Programming Languages	4	--	--	25	75	100	4
T254	Microprocessor and Interfacing	4	1	--	25	75	100	4
T314	Software Testing Methodologies	4	--	--	25	75	100	4
P860	Object Oriented Analysis and Design Lab	--	--	3	25	75	100	2
P851	Microprocessor and Interfacing Lab	--	--	3	25	75	100	2
P871	Seminar - II	--	--	2	50	--	50	1
	TOTAL	24	2	08	250	600	850	30



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VI-SEMESTER

Code No.	Name of the Course	Scheme of Instruction			Scheme of Examination		Total	Credits
		Periods per Week			Maximum Marks			
		Lectures	Tutorial	Lab.	Internal	External		
T145	Computer Networks	4	--	--	25	75	100	4
T141	Compiler Design	4	1	--	25	75	100	4
T340	Web Technologies	4	1	--	25	75	100	4
T238	Linux Internals	4	--	--	25	75	100	4
ELECTIVE - I								
T312	Software Requirements and Estimation	4	--	--	25	75	100	4
T337	Visual Programming							
T274	Parallel Algorithms							
T144	Computer Graphics							
T290	Professional Ethics	4	--	--	25	75	100	3
P881	Web Technologies Lab	--	--	3	25	75	100	2
P848	Linux Internals Lab	--	--	3	25	75	100	2
P810	Comprehensive Viva-Voce - I	--	--	--	100	-	100	2
TOTAL		24	2	06	300	600	900	29

VII-SEMESTER

Code No.	Name of the Course	Scheme of Instruction			Scheme of Examination		Total	Credits
		Periods per Week			Maximum Marks			
		Lectures	Tutorial	Lab.	Internal	External		
T223	Information Security	4	1	--	25	75	100	4
T152	Data Mining and Data Warehousing	4	--	--	25	75	100	4
T258	Mobile Communications	4	--	--	25	75	100	4
T310	Software Project Management	4	--	--	25	75	100	4
T101	Advanced Computer Architecture	4	--	--	25	75	100	4
ELECTIVE - II								
T303	Sensor Networks							
T104	Advanced Database Management Systems,	4	--	--	25	75	100	4
T210	Grid Computing,							
T122	Artificial Intelligence							
P859	Mobile Communications Lab	--	--	3	25	75	100	2
P876	Software Testing Methodologies Lab	--	--	3	25	75	100	2
P843	Internship	--	--	3	50	-	50	2
P878	Term Paper	--	--	--	25	25	50	2
TOTAL		24	1	09	275	625	900	32



VIII-SEMESTER

Code No.	Name of the Course	Scheme of Instruction			Scheme of Examination		Total	Credits	
		Periods per Week			Maximum Marks				
		Lectures	Tutorial	Lab.	Internal	External			
T221	Industrial Management	4	--	--	25	75	100	4	
T311	ELECTIVE - III								
T257	Software Quality Assurance	3	1	--	25	75	100	3	
T214	Middleware Technologies								
T214	Human Computer Interface								
T157	Design Patterns								
T209	ELECTIVE-IV								
T305	Green Computing	3	1	---	25	75	100	3	
T138	Service Oriented Architecture								
T259	Cloud Computing								
P811	Multimedia and Application Development	--	--		100	--	100	2	
P867	Comprehensive Viva - Voce - II	--	--	6	60	140	200	8	
	Project Work	10	2	6	235	365	600	20	
TOTAL CREDITS : 220									

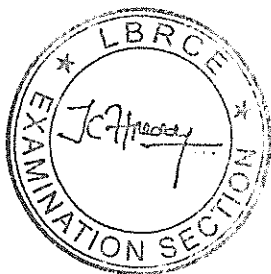


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I-SEMESTER



T118 – APPLIED MATHEMATICS – I

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

UNIT - I

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

UNIT - II

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

Vector Differentiation: Gradient- Divergence - Curl and their related properties of sums-products - Laplacian and second order operators. Vector Integration - Line integral – work done – Potential function – area - surface and volume integrals Vector integral theorems: Greens, Stokes and Gauss Divergence Theorems (Without proof) and related problems.


TEXT BOOKS

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

REFERENCES

1. Advanced Engineering Mathematics by M. D. Greenberg – TMGH
2. Advanced Engineering Mathematics by Erwin Krezig - John Wiley & sons
3. Elementary Differential equations by W. E. Boyce and R. C. DiPrima - John Wiley & sons
4. Advanced Engineering Mathematics by Peter V. O. Neil - Thomson




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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

1. Computer science, A structured programming approach using C, B.A. Forouzan and R.F. Gilberg, Third edition, Thomson.
2. The C Programming Language, B.W. Kernighan, Dennis M.Ritchie, PHI/Pearson Education



REFERENCES

1. C Programming with problem solving, J.A. Jones & K. Harrow, Dreamtech Press
2. Programming in C – Stephen G. Kochan, III Edition, Pearson Educaion
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

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

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.

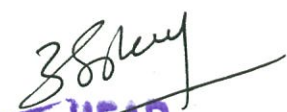
TEXT BOOKS

- Step by Step (Pearson)
- Masterminds by EnakshiChatterjee (Orient Longman)

REFERENCES

1. Andrea J Rutherford. *Basic Communication Skills for Technology*: Pearson Education, New Delhi, 2009.
2. Murphy. *English Grammar with CD*: Cambridge University Press, New Delhi, 2004
3. Rizvi, M Ashraf. *Effective Technical Communication*: Tata McGraw Hill, New Delhi, 2008.
4. Blum Rosen. *Word Power*: Cambridge University Press, New Delhi, 2009.




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T191 - ENGINEERING CHEMISTRY

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

UNIT - I

WATER TECHNOLOGY: Introduction, Hardness of Water - Temporary and Permanent hardness. Units and inter conversions of Units. Problems on Temporary and Permanent hardness. Boiler troubles – scale & sludge formation, Caustic embrittlement, Corrosion, priming & foaming, softening of water Methods of Treatment of Water for Domestic Purposes - Sedimentation, Coagulation, Filtration, Disinfection – Sterilization, Chlorination, Break point chlorination, Ozonization.

Water Treatment: Internal Treatment - Colloidal, Phosphate, Calgon, Carbonate, Sodium aluminates Conditioning of Water. External Treatment - Lime-Soda Process, Zeolite Process, Ion- Exchange Process.

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

CORROSION: Definition, Examples, Types of Corrosion: Theories of Corrosion and Mechanism - Dry Corrosion (Direct Chemical corrosion), Wet Corrosion (Electro Chemical corrosion) Principles of Corrosion, Galvanic Series, Galvanic Corrosion, Concentration Cell Corrosion, Mechanism of Wet and Chemical Corrosion - Hydrogen evolution type, Oxygen absorption type. Factors Influencing Corrosion. Control of Corrosion - Proper Design, Use of pure metal and metal alloys, Passivity, Cathodic Protection - Sacrificial anode and Impressed Current, Modifying the Environment and use of Inhibitors.

UNIT - IV

Polymer Science and Technology: Types of polymerization, Mechanism (Chain growth & step growth), Plastics –Thermosetting and Thermoplastic resins – preparation, properties and engineering applications of Polyethylene, PVC, Polystyrene, Teflon, Bakelite, Nylon, Conducting polymers: polyacetylene, polyaniline, conduction, doping, application. Characteristics and uses Rubber - Natural Rubber, Vulcanization and significance, Elastomers – Buna S, Buna N, Thiokol, Fibers- Polyester, fiber reinforced plastics (FRP), applications.



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UNIT - V

1. REFRACTORIES & INSULATORS: Definition, Classification with Examples, Criteria of a Good Refractory Material, Causes for the failure of a Refractory Material, Insulators – Definition and Classification with Examples. Characteristics of Insulating Materials, Thermal Insulators, Electrical Insulators - Their Characteristics and Engineering Applications.

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

1. A text book of Engineering Chemistry by Jain & Jain, Dhanpat Rai Publishing Company, New Delhi (15th Edition) (2006).
2. A Text book of Engineering Chemistry by Dr. Y. Bharathi Kumari and Dr. Jyotsna Cherukuri, VGS Publications, First Edition, 2009.

REFERENCES

1. A Text book of Engineering Chemistry by Shashi Chawla, Dhanpat Rai Publishing Company, First Edition, 2002.
2. Advanced Engineering Chemistry by Dr. M. R. Senapati, University Science Press (Impart from Laxmi Publications), 3rd Edition 2009.
3. N. Krishnamurthy, P. Vallinayagam and D. Madhavan, Engineering Chemistry, 2nd Edition. PHI Learning PVT., LTD, New Delhi, 2008.
4. A Text book of Engineering Chemistry by S. S. Dara, S CHAND Publications.



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T195 - ENGINEERING PHYSICS – I

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

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

LASERS: Introduction – Characteristics of Lasers- Principle of laser (Absorption, Spontaneous and stimulated emission of Radiation), Einstein Coefficients- Population Inversion - Helium Neon Laser, Semiconductor laser, Applications of Lasers.

FIBER OPTICS: Introduction- Principle of optical Fiber- Acceptance angle and Acceptance cone- Numerical aperture - refractive index profile-Application of optical fibers.

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

NON-DESTRUCTIVE TESTING USING ULTRASONICS: Characteristics Production and detection of ultrasonics-Piezoelectric and magnetostirictionmethods,Ultrasonic Testing - Basic Principle –Transducer – Couplant and inspection Standards – Inspection Methods – Pulse echo Testing Technique – Flaw detector- Different Types of Scans – Applications.

TEXT BOOKS

1. Fundamentals of physics Resinic, Halliday and Krane, John Wiley 2003
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



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P806 – C - PROGRAMMING LAB

Lab/Practicals: 3 Period/Week	Internal Marks : 25
Credits : 2	External Marks : 75
	External Examination : 3 Hrs

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

II) WRITE EXAMPLE PROGRAMS:

- To check whether the given year is leap year (or) not
- Converting given two digit number into words using switch statement
- To illustrate the usage of 'goto' statement.
- Finding smallest & biggest number from the given set of 4 numbers using 'if' statement.
- Calculate the student grade in the examination – assume suitable constraints.
- Prepare electricity bill for the consumed units – assume suitable constraints.


III) EXAMPLE PROGRAMS:

- To Display first N natural numbers
- To find whether the given number is Armstrong (or) not
- To find reverse of the given number and to check whether it is palindrome (or) not.
- To find whether given number is strong number (or) not.
- To check whether given number is Prime (or) not
- To display prime numbers with in the given range(Nesting of Loops).
- To display the following structure(Nesting of Loops)

i)	1	ii) 5	4	3	2
	1		4	3	2
	1	2	3	2	1
	1	2	3	4	5
	2	3	4	5	1

Write example programs in C Language:




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- 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

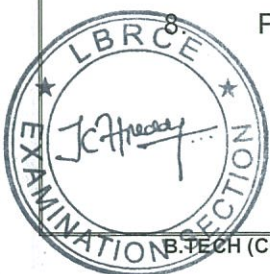
ENGINEERING PHYSICS LABORATORY
(Any 5 experiments)

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 $K_2Cr_2O_7$ v/s $Na_2S_2O_3$ to determine the percentage purity of $K_2Cr_2O_7$ sample.
 4. Preparation of Stanard 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
 6. Determination of alkalinity of water sample.
 7. Determination of Dissolved Oxygen (DO) content by Winkler's method.
- Preparation of Urea formaldehyde resin.



P831 - ENGINEERING WORKSHOP

	Internal Marks	: 25
Lab/Practicals: 3 Period/Week	External Marks	: 75
Credits : 2	External Examination	: 3 Hrs

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 : (MECHCHANICAL ENGINEERING)

At least two exercise from each trade :

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

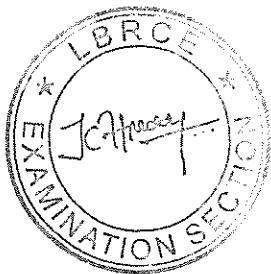
TEXT BOOK

Workshop manual / P. Kannaiah / K.L. Narayana Scitech Publications, India Pvt Ltd, Chennai.



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II-SEMESTER



T119 - APPLIED MATHEMATICS – II

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

UNIT - I

Laplace transforms of standard functions –Shifting Theorems, Transforms of derivatives and integrals – Unit step function –Dirac's delta function. Inverse Laplace transforms– Convolution theorem - Applications of Laplace transforms to ordinary differential equations

UNIT - II

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

UNIT - III

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

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

REFERNCES

1. Advanced Engineering Mathematics by Michael D. Greenberg – TMGH
2. Advanced Engineering Mathematics by Erwin Krezig - John Wiley & sons




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T198 - ENGLISH-II

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

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 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)

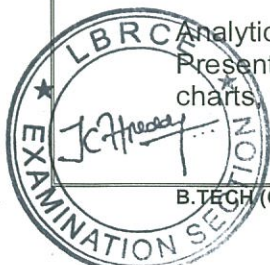
UNIT - IV

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



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TEXTBOOK

Step by Step, Pearson Education, New Delhi 2010.
Master Minds, (Orient Longman).

REFERENCES

1. Koneru Aruna. *Professional Communication*: Tata McGraw-Hill, New Delhi, 2007.
2. *Effective Technical Communication*, Rizvi, Tata McGraw-Hills, New Delhi, 2009.
3. *Basic Communication Skills for Technology*, Andrea J. Rutherford, Pearson Education.
4. GRE and TOEFL, Kaplan and Baron's, Latest editions.



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T264 - NUMERICAL METHODS

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

UNIT - I

Linear systems of equations: Rank-Echelon form, Normal form – Solution of Linear Systems – Direct Methods- Gauss Elimination - Gauss Jordan and Gauss Seidal Methods. Eigen values – Eigen Vectors – Properties – Cayley Hamilton Theorem – Inverse and Powers of a matrix by using Cayley Hamilton Theorem.

UNIT - II

Quadratic forms – Reduction to Canonical form – Rank and Nature of Quadratic form. Solution of Algebraic and Transcendental Equations: Introduction – The Method of False Position – Newton-Raphson Method.

UNIT - III

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

UNIT - IV

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

UNIT - V

Numerical solution of Ordinary Differential equations: Solution by Taylor's series-Picard's Method of successive Approximations-Euler's Method-Runge- Kutta Methods –Predictor-Corrector Methods- Milne's Method. Curve fitting: Fitting a straight line –Second degree curve-exponential curve by method of least squares.

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
3. Numerical Methods for scientific and engineering by M. K. Jain, S. R. K. Iyengar – New Age International Ltd.



T153 – DATA STRUCTURES

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

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

Searching: Linear and Binary Searching. **Internal Sorting:** Insertion Sort, Shell Sort, Heap Sort, Merge Sort, Quick Sort, Bucket Sort. **External Sorting:** Model for External Sorting Algorithm, Multiway Merge, Poly Phase Merge, Replacement Selection. Comparison of Sorting Timing Complexities.

UNIT - IV

Binary Trees: Implementation, Expression Tress. **Search Trees:** Binary Search Trees, Implementation. **AVL Trees:** Single Rotations, Double Rotations. **Splay Trees:** Splaying, B-Trees.

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", 2nd ed, AW.

REFERENCES

1. Langson, Augenstein & Tenenbaum, 'Data Structures using C and C++', 2nd ed, PHI.
2. Robert L.Kruse, Leung and Tando, 'Data Structures and Program Design in C', 2nd ed, PHI.



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T188 – ELECTRONIC DEVICES AND CIRCUITS

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

UNIT - I

JUNCTION DIODE CHARACTERISTICS : Review of semi conductor Physics – n and p –type semi conductors, Mass Action Law, Continuity Equation, Hall Effect, Fermi level of semiconductors, Energy band diagram of PN diode, PN diode-biasing, The current components, Diode equation, V-I characteristics, Temperature dependence of VI characteristic, Transition and Diffusion capacitances, Breakdown Mechanisms in p-n Diode, Zener diode, Tunnel Diode, Varactor Diode, LED, LCD. And photo diode

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_{CO} .) Thermal run away, Thermal stability.

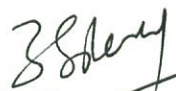
UNIT - V

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_i , R_i , A_v , R_o , Introduction to feedback Amplifier and Oscillators.

TEXT BOOK

Electronic Devices and Circuits – J.Millman, C.C.Halkias, and Satyabratha Jit Tata McGraw Hill, 2nd Ed., 2007.




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REFERENCES

1. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, Pearson/Prentice Hall,9th Edition,2006.
2. Electronic Devices and Circuits – S Salivahanan, N.Suresh Kumar and A Vallavaraj, McGraw Hill, 5th edition, 2010.
3. Electronic Devices and Circuits – T.F. Bogart Jr., J.S.Beasley and G.Rico, Pearson Education, 6th edition, 2004.
4. Principles of Electronic Circuits – S.G.Burns and P.R.Bond, Galgotia Publications, 2nd Edn., 1998.
5. Microelectronics – Millman and Grabel, Tata McGraw Hill, 1988.
6. Electronic Devices and Circuits – Dr. K. Lal Kishore, B.S. Publications, 2nd Edition, 2005.
7. Electronic Devices and Circuits- Prof GS N Raju I K International Publishing House Pvt. Ltd 2006.

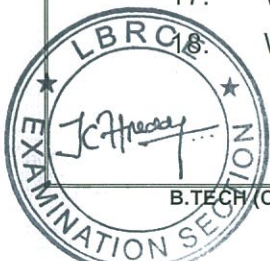
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P815 – DATA STRUCTURES LAB.

Lab/Practicals: 3 Period/Week	Internal Marks	: 25
Credits : 2	External Marks	: 75
	External Examination	: 3 Hrs

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.

	Internal Marks	: 25
Lab/Practicals: 3 Period/Week	External Marks	: 75
Credits : 2	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

1. Engineering Graphics with AutoCAD by Bethune PHI Learning Private Limited, New Delhi, 2009.
2. Engineering Graphics with AutoCAD by M. Kulkarni, A.P Rastogi, and A.K. Sarkar; PHI Learning Private Limited, New Delhi, 2009
3. Engineering Drawing by N.D. Bhatt, Charitor publications.



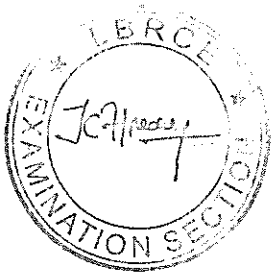
P827 – ELECTRONIC DEVICES AND CIRCUITS USING LABVIEW

	Internal Marks	: 25
Lab/ Practicals : 3 Period/Week	External Marks	: 75
Credits : 2	External Examination	: 3 Hrs

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



III-SEMESTER



T166 – DISCRETE MATHEMATICAL STRUCTURES

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

UNIT - I**Mathematical Logic :**

Propositional Calculus: Statements and Notations, Connectives, Truth Tables, Tautologies, Equivalence of Formulas, Duality law, Tautological Implications, Normal Forms, Theory of Inference for Statement Calculus, **Consistency of Premises, Indirect Method of Proof.**

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

UNIT - II**Set Theory:**

Introduction, Operations on Binary Sets.

Relations: Properties of Binary Relations, Relation Matrix and Digraph, Operations on Relations, Partition and Covering, Transitive Closure, Equivalence, Compatibility and Partial Ordering Relations, Hasse Diagrams. **Functions:** Bijective Functions, Composition of Functions, Inverse Functions, Permutation Functions, Recursive Functions

UNIT - III**Graph Theory:**

Basic Concepts of Graphs, Sub graphs, Matrix Representation of Graphs: Adjacency Matrices, Incidence Matrices, Isomorphic Graphs, Eulerian and Hamiltonian Graphs, Multigraphs, Graph Theory II: Planar Graphs, Euler's Formula, Graph Coloring, Chromatic Number, Trees, Spanning Trees: Properties, Algorithms for Spanning trees and Minimum Spanning Trees.

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
4. Discrete Mathematics, Chandrasekaran, Umavathi, 2010, PHI
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

Random variables – Discrete and continuous distributions - Distribution function. Binomial, Poisson, normal distribution – related properties. Moment generating function, Moments of standard distributions, Evaluation of mean, standard, variance, kurtosis and skewness.

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 χ^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



T162 – DIGITAL LOGIC DESIGN

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

UNIT - I

Binary Systems: Digital Computers and Digital Systems, Binary Numbers, Number base Conversion, Octal and Hexadecimal Numbers, Complements, Binary Codes, Binary Storage and Registers, Binary Logic, Integrated Circuits. **Boolean Algebra And Logic Gates:** Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and Properties of Boolean Algebra, Boolean functions, Canonical and Standard Forms, Other operations, Digital Logic Gates.

UNIT - II

Simplification Of Boolean Expressions: Formulation of simplification problem, Prime Implicants and irredundant disjunctive and conjunctive expression, Karnaugh 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

Combinational Logic: Design Procedure, Adders, Subtractors, Code Conversion, Analysis Procedure, multilevel NAND and NOR circuits. Combinational Logic with MSI and LSI: Binary Parallel Adder, Decimal Adder, Magnitude Comparator, Decoders, Multiplexers.

UNIT - IV

Sequential Logic: Flip Flops, Triggering of Flip-Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Flip-Flop Excitation tables, Design Procedure, Design of Counters, Design with state equations Registers, Counters and Memory : Registers. Shift registers, Ripple Counters, Synchronous Counters, Timing sequences, the memory unit.

UNIT - V

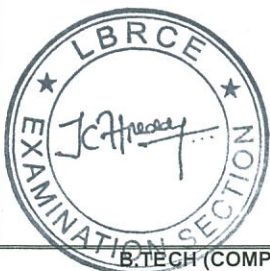
Programmable Logic: Read – Only Memory (ROM), PROM, Programmable Logic Device (PLD), Programmable Logic Array (PLA), Programmable Array Logic (PAL).

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)



T199 – ENVIRONMENTAL STUDIES

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

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

Ecosystems : Concept of an ecosystem. - Structure and function of an ecosystem.- Producers, consumers and decomposers. - Energy flow in the ecosystem – Ecological succession. - Food chains, food webs and ecological pyramids.

Biodiversity and its conservation: Introduction - Definition: genetic, species And ecosystem diversity. - Bio-geographical classification of India - Value of Biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. - India as a mega diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. - Endangered and endemic species of India – Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity. **[11 Lectures]**

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

Social Issues and the Environment: From Unsustainable to Sustainable development - Urban problems related to energy -Water conservation, rain water harvesting, watershed management -Resettlement and rehabilitation of people; its problems and concerns. Case Studies -Environmental ethics: Issues and possible solutions. -Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. - Wasteland reclamation. – Consumerism and waste products. **[11 Lectures]**

UNIT – V

Human Population and the Environment: Population growth, variation among nations. Population explosion – Family Welfare Programme -Environment and human health. - Human Rights. -Value Education. HIV/AIDS. -Women and Child Welfare. -Role of information Technology in Environment and human health. –Case Studies. Environment Protection Act. -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act -Wildlife Protection Act -Forest Conservation Act -Issues involved in enforcement of environmental legislation. -Public awareness. **[11 Lectures]**

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



T266 – OBJECT ORIENTED PROGRAMMING USING (C++)

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

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.

C++ Files: Introduction, Classes for file stream Operations, Opening and closing a file, detecting end-of-file, I/O Operations, command line arguments.



TEXT BOOK

Herbert Schildt, The Complete Reference C++, Fourth Edition, Tata McGraw Hill.

REFERENCES

1. E.Balaguruswamy, Object Oriented Programming with C++, Third Edition, TMH.
2. Deitel & Deitel, C++ How to Program, Third Edition, Pearson Education.
3. Ashok N Kamthane, Object Oriented Programming with ANSI& Turbo C++.



P819 – DIGITAL LOGIC DESIGN LAB

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

- Design AND, OR and EX_OR gates using NAND (7400) gates and verify them.
- (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.
- Design a full adder circuit using AND, OR and XOR gates. Verify it. Design a 4 - Bit comparator using logic gates.
- Design a Pseudo-random bit generator and check its performance.
- 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.
- Design a Master - Slave J-K Flip-Flop using Logic gates.
- (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...
- 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.
- 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.
- 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.

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

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 nth 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**.
Write a C++ program which **copies the contents of one file to another**.



P832 – ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

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

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
2. *Sky Pronunciation Suite: Young India Films, Chennai, 2009*
3. *Mastering English in Vocabulary, Grammar, Spelling, Composition*, Dorling Kindersley, USA, 2001
4. *Dorling Kindersley Series of Grammar, Punctuation, Composition*, Dorling Kindersley, USA, 2001
5. *Oxford Talking Dictionary*, The Learning Company, USA, 2002
6. *Learning to Speak English - 4 CDs*. The Learning Company, USA, 2002
7. *Cambridge Advanced Learners English Dictionary (with CD)*. Cambridge University Press, New Delhi, 2008



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

Transaction Processing Concepts: Transaction system, Testing of serializability, Serializability of schedules, conflict & view serializable schedule, recoverability, Recovery from transaction failures, log based recovery, checkpoints, deadlock handling.

UNIT - V

Concurrency 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

1. Korth, Silbertz, Sudarshan, "Database Concepts", McGraw Hill

REFERENCES

1. Elmasri, Navathe, "Fundamentals Of Database Systems", Addison Wesley
2. Raghu Ramakrishnan, "Database Management System", McGraw Hill
3. Maheshwari Jain, "DBMS: Complete Practical Approach", Firewall Media, New Delhi.
4. Date C J, "An Introduction To Database System", Addison Wesley



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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.

Basic Computer Organization And Design: Instruction codes. Computer Registers ,Computer instructions– Instruction cycle. Memory – Reference Instructions. Input – Output and Interrupt.

UNIT - II

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

Central Processing Unit: STACK organization. Instruction formats. Addressing modes. DATA Transfer and manipulation. Program control. Reduced Instruction set computer.

UNIT - III

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

Computer Arithmetic : Data Representation. Fixed Point Representation. Floating – Point Representation ,Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – point Arithmetic operations. Decimal Arithmetic unit Decimal Arithmetic operations

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

Computer Systems Architecture – M.Moris Mano, 3rd Edition, Pearson/PHI

REFERENCES

1. Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, 5th Edition, McGraw Hill.
2. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI
3. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition PHI/Pearson
4. Fundamentals or Computer Organization and Design, - Sivarama Dandamudi Springer Int.Edition.



T267 – OPERATING SYSTEMS

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

UNIT - I

Introduction Computer-System Organization, Computer-System Architecture, Operating-System Structure, Operating-System Operations, Process Management, Memory Management, Storage Management, Protection and Security, Distributed Systems, Special-Purpose Systems. **Operating-System Structures-** Operating-System Services, User Operating-System Interface, System Calls, Types of System Calls, System Programs, Operating-System Design and Implementation, Operating-System Structure, Virtual Machines, Operating-System Generation, System Boot.

UNIT - II

Processes-Concept, Process Scheduling, Operations on Processes, Inter-process Communication, Examples of IPC Systems, Communication in Client-Server Systems. **Multithreaded Programming-** Multithreading Models, Thread Libraries, Threading Issues. **Process Scheduling-**Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling.

UNIT - III

Synchronization-The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors, Synchronization Examples, and Atomic Transactions. **Deadlocks-** System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention. Deadlock Avoidance, Deadlock Detection. Recovery from deadlock.

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

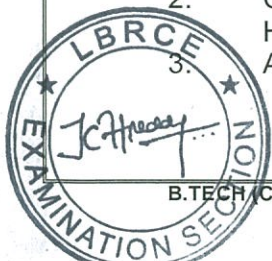
File-System - The Concept of a File, Access Methods, Directory Structure, File-System Mounting, File Sharing, Protection. **Implementing File system-** File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management, Efficiency and Performance, Recovery.

TEXT BOOK

Silberschatz & Galvin, 'Operating System Concepts', 7th edition, Wiley.

REFERENCES

1. William Stallings-"Operating Systems"- 5th Edition - PHI
2. Charles Crowley, 'Operating Systems: A Design-Oriented Approach', Tata McGraw Hill Co., 1998 edition.
3. Andrew S.Tanenbaum, 'Modern Operating Systems', 2nd edition, 1995, PHI.



T226 – INTERNET PROGRAMMING

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

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.

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

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 edition, Herbert Schildt, TMH.

REFERENCES

1. E. Balaguruswamy, 'Programming with JAVA', 2nd Edition (TMH).
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, incremental, 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

Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, 6th edition, 2005.

REFERENCES

1. Ian Sommerville, Software engineering, Pearson education, 8th edition, 2008.
 2. Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxford University Press, New Delhi, 1996.
 3. Stephan Schach, Software Engineering, Tata McGraw Hill, 2007
- Pfleeger and Lawrence Software Engineering: Theory and Practice, Pearson education, second edition, 2001.

T127 – BASIC ELECTRICAL ENGINEERING

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

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

Definition of mmf, flux and reluctance, leakage flux, fringing, magnetic materials and B-H relationship. Problems involving simple series-parallel magnetic circuits. Analysis of linear and non-linear magnetic circuits. Energy storage, AC excitation. Eddy currents and hysteresis losses. Coupled circuits (Dot rule), self and mutual inductances, coefficient of coupling.

UNIT - III

Synchronous Machine and 3 phase Induction motor

Principle of operation of alternators – regulation by synchronous impedance method – MMF and zero power factor methods. Principle of operation of Synchronous machine- Principle of operation of three-phase induction motors – Slip ring and Squirrel cage motors – Slip-Torque characteristics

UNIT - IV

Transformers

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

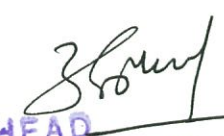
UNIT - V

Electrical And Electronics Measuring Instruments
 Electrical Instruments: Basic principle of indicating instruments, permanent magnet moving coil and moving iron instruments.
 Electronic Instruments: Principles of CRT (Cathode Ray Tube), Deflection, sensitivity, Electrostatic and magnetic deflection, Applications of CRO, Voltage, Current and frequency instruments.

TEXT BOOKS

1. Basic Electrical Engineering - T.K. Nagasarkar and M.S. Sukhija, Oxford University Press, 2005
2. Introduction to Electrical Engineering – M.S. Naidu and S. Kamakshiah, TMH Publ.
3. William H. Kayt Jr. Jack, E. Kemmerly, Steven M. Durbin, "Engineering circuit analysis" 6th edition, Tata Mc Graw-Hill 2006 Edition




HEAD
 Department of Computer Science and Engineering
 Lakireddy Bali Reddy College of Engineering
 Mylavaram - Krishna (Dist) - 521 230

REFERENCES

1. Theory and Problems of basic electrical engineering - I.J. Nagarath amd D.P Kothari, PHI Publications
2. Principles of Electrical Engineering - V.K Mehta, S.Chand Publications
3. Network Analysis by Vanvalkenburg, PHI
4. Network Theory by N.C.Jagan & C.Lakshminarayana,B.s Publication.



P817 – DATABASE MANAGEMENT SYSTEMS LAB.

Lab	: 3 Periods/week	Internal Marks	: 25
		External Marks	: 75
Credits	: 2	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



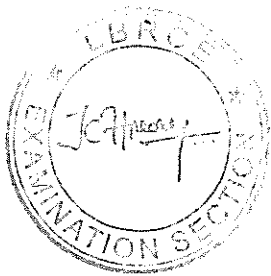
P842 – INTERNET PROGRAMMING LAB.

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

- 1 (a). Write a java program using Abstract class?
(b). Write a java program to check whether given number is prime or not?
- 2 (a). Write a java program using Inheritance?
(b). Write an applet program to handle Mouse events?
- 3 (a). Write a java program to reverse the given number?
(b). Write an applet program using Graphics?
- 4 (a) Write a java program to implement Dynamic method dispatch?
(b) Write an applet program using Key events?
- 5 (a). Write a java program to create Multiple Threads?
(b). Write a java program to create user information system using Swings?
- 6 (a). Write a java program by using Exception handling mechanism?
(b). Write a java program by using super key word?
- 7 (a). Write a java program by using final variables and final methods?
(b). Write a java program by using AWT components?
- 8 (a). Write an applet program to display information an applet?
(b). Write a java program to find the sum of the numbers by using Command line arguments?
- 9 (a). Write a java program to generate Fibonacci series?
(b). Write an applet program to handle Mouse events?
- 10 (a) Write a java program to demonstrate Packages?
(b) Write a java program by using Swing components?
- 11 (a). Write a java program to implement Over Loading?
(b) Write an Applet program using Graphics?
- 12 (a). Write a java program to implement Overriding?
(b). Write an applet program to pass parameters to Applet.?
- 13 (a). Write a java program using Constructors.?
(b). Write an applet program using Key events?
- 14(a). Write a java program to find the roots of a quadratic equation?
(b) Write a java program to implement Multiple inheritance?
- 15(a). Write a java program length and capacity program ?
(b). Write a java program to find the factorial of a given number using recursion?
- 16(a). Write a java program to find out area of a circle. ?
(b). Write a java program to implement arithmetic calculator?
- 17(a). Write a java program to perform matrix Multiplication?
(b). Write a java program using string buffer?
- 18(a). Write a java program to implement stack ADT?
(b). Write a java program by using Bubble sort?
- 19 (a) Write a java program to find min and max number of given Array?
(b) Write a java program to find sum of n numbers using String Tokenizer?
(c). Write a java program to sort array elements by using Bubble sort?
- 20 (a). Write a java program to search an element by using linear search?
(b) Write a simple Applet program?
(c). Write a java program to find sum of 'n' numbers using Recursion?
- 21 (a). Write a java program to check whether the given string is palindrome (or) not?
(b) Write a java program to sort the Strings in ascending order?
(c). Write a java program to find sum of the numbers using String Tokenizer?.



V-SEMESTER



T156 – DESIGN AND ANALYSIS OF ALGORITHMS

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

UNIT - I

Introduction- Algorithm, Performance Analysis-Space Complexity, Time Complexity, Asymptotic Notations-Big-Oh, Omega, Theta. **Divide and Conquer-** General Method, Binary Search, Finding Maximum and Minimum, Merge Sort.

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

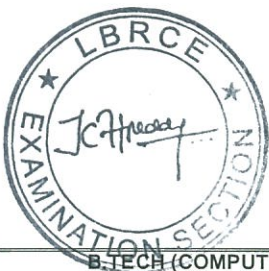
Branch and Bound - The method, 0/1 Knapsack problem, Traveling salesperson, Efficiency considerations. **NP hard and NP Complete Problems** - Basic concepts, Cook's Theorem, NP-Hard Graph problems, NP-Hard Scheduling problem, some simplified NP-Hard problems.

TEXT BOOK

Ellis Horowitz, Sartaj Sahni, 'Fundamentals of Computer Algorithms', Galgotia Pubs.

REFERENCES

Aho, Hopcroft & Ullman, 'The Design and Analysis of Computer Algorithms', Addison Wesley.
Thomas H. Corman et al, 'Introduction to Algorithms', PHI.



T123 – AUTOMATA THEORY AND FORMAL LANGUAGES

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

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 ϵ -transitions - Significance, acceptance of languages. Conversions and Equivalence: Equivalence between NFA with and without ϵ -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

Grammar Formalism: Regular grammars-right linear and left linear grammars, Context free grammar, derivation trees, Right most and leftmost derivation of strings, Ambiguity in context free grammars.

Minimization of Context Free Grammars. Chomsky normal form, Greiback normal form, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL

UNIT - IV

Push Down Automata: Push down automata, definition, model, acceptance of CFL, Acceptance by final state and acceptance by empty state and its equivalence. Equivalence of CFL and PDA and Interco version.

UNIT - V

Turing Machine: Turing Machine, definition, model, design of TM, Computable functions, Techniques of Turing Machine Construction **Undesirability:** Properties of Recursive and Recursively Enumerable Languages; Universal Turing Machines (without any reference to undecidable problems), undesirability of posts. Correspondence problem, **The Chomsky Hierarchy:** Regular grammars, unrestricted grammars, Context sensitive languages.



TEXT BOOKS

1. "Introduction to Automata Theory Languages and Computation". Hopcroft H.E. and Ullman J. D. Pearson Education
2. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley.

REFERENCES

1. Introduction to languages and the Theory of Computation, John C Martin, TMH
2. "Elements of Theory of Computation", Lewis H.P. & Papadimition C.H. Pearson /PHI.
3. Theory of Computer Science – Automata languages and computation - Mishra and Chandrashekar, 2nd edition, PHI
4. Introduction to Theory of Computation –Sipser 2nd edition Thomson



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 modelling, conceptual model of the UML, Architecture, Software Development Life Cycle.

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 User Guide, Pearson Education.

REFERENCES

1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.
2. Pascal Roques: Modeling Software Systems Using UML2, WILEY- Dreamtech India Pvt. Ltd.
3. Atul Kahate: Object Oriented Analysis & Design, The McGraw-Hil Companies.
4. Applying 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

Preliminary Concepts: Reasons for studying, concepts of programming languages, Programming domains, Language Evaluation Criteria, influences on Language design, Language categories, Programming Paradigms – Imperative, Object Oriented, functional Programming ,Logic Programming. Programming Language Implementation – Compilation and Virtual Machines, programming Environments.

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 sub-programs, parameters that are sub-program names, design issues for functions user defined overloaded operators, co routines. **Concurrency:** Subprogram level concurrency, semaphores, monitors, message 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 Zelkowitz, Fourth Edition PHI/Pearson Education
- Programming languages –Watt, Wiley Dreamtech



T254 – MICROPROCESSOR AND INTERFACING

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

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

Interrupt structure of 8086. Vector interrupt table. Interrupt service routines. Introduction to DOS and BIOS interrupts, 8259 PIC Architecture and interfacing cascading of interrupt controller and its importance, Serial data transfer schemes. Asynchronous and Synchronous data transfer schemes, 8251 USART architecture and interfacing, TTL to RS 232C and RS232C to TTL conversion, Sample program of serial data transfer, Introduction to High-speed serial communications standards, USB.

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

1. Microprocessors and Interfacing 2nd revised edition – Douglas V. Hall, Tata Mc. Graw Hill.
2. The 8051 Microcontroller, 3rd Edition – Kenneta J. Ayala, Thomson Delmar learning.

REFERENCES

1. Advanced microprocessor and Peripherals, 2nd Edition - A.K.Ray, K.M.Bhurchandi, Tata Mc. Graw Hill.
2. The 8086/8088 family: Design Programming and Interfacing, John Uffenbeck, PHI Learning.
3. Micro Controllers: Theory and Applications Ajay V. Deshmukh, Tata Mc.Graw Hill



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

Baris Beizer; "Software Testing Techniques"; International Thomson computer Press, Second edition.

REFERENCES

1. Brain Marick; "The Craft of Software Testing"; Prentice Hall Series in innovative technology.
2. Renu Rajani Pradeep Oak; "Software Testing, Effective methods, Tools and Techniques"; TMHI
3. Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech.
4. Software Testing in the Real World – Edward Kit, Pearson.
Effective methods of Software Testing, Perry, John Wiley.



HEAD 
Department of Computer Science and Engineering
Lakireddy Bali Reddy College of Engineering
Mylavaram - Krishna (Dist) - 521 230

P860 – OBJECT ORIENTED ANALYSIS AND DESIGN LAB.

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

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
		External Marks	: 75
Credits	: 2	External Examination	: 3 Hrs

Cycle-I (Introduction to 8086 Programming)

1. Write 8086 program to implement Multi byte addition?
2. Write 8086 program to implement Multi byte SuCSraction?
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 SuCSraction of two ASCII numbers ?
7. Write 8086 program to implement Multi byte SuCSraction?
8. Write 8086 program to implement Multi byte SuCSraction?

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 ?



VI-SEMESTER



T145 – COMPUTER NETWORKS

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

UNIT - I

Introduction: Use of Computer Networks- Network Hardware- Network software-Reference models Example Networks- Network Standardization. Physical Layer: The theoretical basis for Data communication- Guided Transmission Media.

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

Application Layer: Domain Name System- Electronic Mail -the World Wide Web, Network Security.

TEXT BOOK

Andrews S. Tanenbaum; "Computer Networks"; Fourth Edition, PHI.

REFERENCES

1. William Stallings; "Data and Computer Communications"; seventh Edition, Pearson Education.
2. Behrouz A .Fourouzan; "TCP/IP Protocol Suite"; Fourth Edition, Tata McGraw-Hill.
3. James F.Kurose, Keith W.ROSS; "Computer Networking A Top-Down Approach featuring the Internet"; Pearson Education.



T141 – COMPILER DESIGN

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

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.

Code generation : Machine dependent code generation, object code forms, generic code generation algorithm, Register allocation and assignment. Using DAG representation of Block.

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 Scripts, Objects in Java Script, Dynamic HTML with Java Script

UNIT - II

XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX. **Java Beans:** Introduction to Java Beans, Advantages of Java Beans, Persistence, Java Beans API, Introduction to EJB's.

UNIT - III

Servlets: Introduction to Servlets: Lifecycle of a Servlet, The Servlet API, The javax.servelet Package, Servlet parameters, Initialization parameters. The javax.servelet HTTP package, Http Request & Responses, Cookies- Session Tracking, Security Issues.

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

Database Access: Database Programming using JDBC, Javax.sql.* package, Accessing a Database from a JSP Page, Application – Specific Database Actions, Deploying JAVA Beans in a JSP Page.

Struts Framework: Introduction to Struts, Overview of MVC Design Pattern, Struts main Components, Controller components (Action Servlet, Request Processor, Action, Action Mapping, Action Form Beans, Struts Configuration files.

TEXT BOOK

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

REFERENCES

1. Jakarta Struts Cookbook , Bill Siggelkow, S P D O'Reilly (UNIT-5)
2. Programming world wide web-Sebesta, Pearson
3. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty - Hall and Larry Brown Pearson
4. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
5. Programming world wide web-Sebesta,Pearson Java Server Pages, Pekowsky, Pearson.



T238 – LINUX INTERNALS

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

UNIT - I

Introduction: Operating System Concepts, Introduction to Linux, Linux Terminals & Shell, Linux File System, Concept of process in Linux.

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

UNIT - II

Shell Programming / Scripts: Bourne shell Overview. User, Shell, and Read-Only Shell Variables. Positional Parameters. Control Constructs.

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 Sockets-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

1. Linux Kernel Internals, M. Beck, H. Bome, et al, Pearson Education, Second Edition, 2001
2. Unix Network Programming, Vol. I, Sockets API, 2nd Edition – W. Richard Stevens.

REFERENCES

1. The Design of the UNIX Operating Systems, Maurice. J. Bach, PHI, 1998
2. Unix Network programming 1st Edition – W. Richard Stevens. PHI



T312 – SOFTWARE REQUIREMENTS AND ESTIMATION

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

UNIT - I

Introduction to Requirements Engineering: Software Requirements Definition – Levels of Requirements – Requirement Engineering - Requirements Development and Management – When Bad Requirements happen to Nice People - Benefits from a High quality requirements process – Characteristics of Excellent Requirements– Functional and Nonfunctional Requirements –Good Practices for Requirements Engineering

UNIT - II

Requirements Elicitation, Analysis and Documentation : Requirements Elicitation Guidelines – Requirements Elicitation Techniques – Requirement Analysis – Requirement Analysis Models – Requirement Analysis and Negotiation – Requirements Documentation – Characteristics of Software Requirements Specification Document – Contents of SRS – Common Problems with SRS

UNIT - III

Requirements Validation and Management : Validation objectives –Review the Requirements – The Inspection Process – Requirements Review Challenges – Testing the Requirements – Defining Acceptance Criteria – Requirement Validation Guidelines
Requirements Management – Requirement Traceability – Database to Manage Requirements – Change Management Policies – Software Requirements and Risk Management

UNIT - IV

Software Size Estimation : Software Estimation –Size Estimation – Two views of Sizing – Function Point Analysis – Mark II FPA – Full Function Points - LOC Estimation – Conversion between Size Measures

UNIT - V

Effort – Schedule, Cost Estimation & Tools: What is Productivity? – Estimation Factors – Approaches for Effort and Schedule Estimation – COCOMOII – Putnam Estimation Model – Algorithmic Models – Cost Estimation

Tools: Desirable Features of Requirements Management Tools – Some Requirements Management Tools Available –Desirable Features in Software Estimation Tools – Some Software Estimation Tools Available

TEXT BOOKS

1. Software Requirements, Karl E. Wiegers, Word Power Publishers, 2000
2. Software Requirements and Estimation, Rajesh Naik , Swapna Kishore, TMH



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REFERENCES

1. Requirements Engineering: A Good practice Guide, Ian Sommerville, Pete Sawyer, Pearson, 2004
2. Managing Software Requirements A Use Case Approach, 2/e, Dean, Don , Addison-Wesley, 2003
3. Requirements Engineering and Rapid Development, Ian Graham, Addison-Wesley, 1998
4. Mastering the Requirements Process. 2/e, S.Robertson, J.Robertson, Pearson, 2006



T337 – VISUAL PROGRAMMING

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

UNIT - I

WINDOWS PROGRAMMING: Windows environment – a simple windows program – windows and messages – creating the window – displaying the window – message loop – the window procedure – message processing – text output – painting and repainting – introduction to GDI – device context – basic drawing – child window controls

UNIT - II

VISUAL C++ PROGRAMMING – INTRODUCTION: Application Framework – MFC library – Visual C++ Components – Event Handling – Mapping modes – colors – fonts – modal and modeless dialog – windows common controls – bitmaps

UNIT - III

THE DOCUMENT AND VIEW ARCHITECTURE: Menus – Keyboard accelerators – rich edit control – toolbars – status bars – reusable frame window base class – separating document from its view – reading and writing SDI and MDI documents – splitter window and multiple views – creating DLLs – dialog based applications

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

ADVANCED CONCEPTS: Database Management with Microsoft ODBC – Structured Query Language – MFC ODBC classes – sample database applications – filter and sort strings – DAO concepts – displaying database records in scrolling view – Threading – VC++ Networking issues – Winsock – Winlnet – building a web client – Internet Information Server – ISAPI server extension – chat application – playing and multimedia (sound and video) files

TEXT BOOK

Charles Petzold, "Windows Programming", Microsoft press, 1996 (Unit I – Chapter 1-9)

REFERENCES

1. David J.Kruglinski, George Shepherd and Scot Wingo, "Programming Visual C++", Microsoft press, 1999 (Unit II – V)
2. Steve Holtzner, "Visual C++ 6 Programming", Wiley Dreamtech India Pvt. Ltd., 2003.



T274 – PARALLEL ALGORITHMS

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

UNIT - I

Introduction: Parallel Processing, Background, Parallel Models, Performance of parallel Algorithms, The Work-Time Presentation Framework, The Optimality Notion.

UNIT - II

Basic Techniques: Balanced Trees, Pointer Jumping, Divide and Conquer, Partitioning, Pipelining, Accelerated Cascading, Symmetry Breaking. **Lists and Trees:** List Ranking, Euler-Tour Techniques, Tree Contraction, Lowest Common ancestors.

UNIT - III

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

UNIT - IV

Graphs: Connected Components, Minimum Spanning Trees, Biconnected Components, Ear Decomposition, Directed Graphs.

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

Joseph, "Introduction to Parallel Algorithms", Pearson Edition Wesley.

REFERENCES

David Culler and J. P. Singh with Anoop Gupta, "Parallel Computer Architecture: A Hardware/Software Approach"; Morgan Kaufmann Publishers.



T144 – COMPUTER GRAPHICS

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

UNIT - I

Introduction: Usage of Graphics and their applications, Presentation Graphics-Computer Aided Design-Computer Art- Entertainment- Education and Training-Visualization- Image Processing- Graphical User Interfaces. Over view of Graphics systems: Video Display Devices- Raster Scan systems-random scan systems-Graphics monitors and workstations-Input devices.

UNIT - II

Output primitives: Points and Lines-Line Drawing Algorithms- Loading the Frame buffer-Line function- Circle- Generating Algorithms- Ellipse Generating Algorithms-Other Curves-Parallel Curve Algorithms-Curve Functions-Pixel Addressing- Filled Area Primitives-Filled Area Functions.

UNIT - III

Two Dimensional Geometric Transformations: Basic Transformations- Matrix Representations - Homogeneous Coordinates - Composite Transformations - Other Transformations-Transformations between Coordinate Systems - Affine Transformations-Transformation Functions- Raster methods for Transformation.

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

Three Dimensional Concepts and Object representations: 3D display methods-3DGraphics-Polygon Surfaces- Curved Lines and Surfaces- Quadratic Surfaces, Three Dimensional Geometric and Modeling Transformations: Translation-Rotation-scaling-Other Transformations-Composite Transformations-3D Transformation Functions-Modeling and Coordinate Transformations.

TEXT BOOK

1. Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004 (Chapters 1 to 12 except 10-9 to 10-22 of the Text book)

REFERENCES

1. David F. Rogers; "Procedural Elements for Computer Graphics"; TMH
2. J. D. Foley, S. K Feiner, A Van Dam F. H John; "Computer Graphics: Principles & Practice in C"; Pearson
Francis S Hill Jr; "Computer Graphics using Open GL"; Pearson Education, 2004.



T290 – PROFESSIONAL ETHICS

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

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**

Morals, Values and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage – Valuing Time – Cooperation – Commitment – Empathy – SelfConfidence – Character – Spirituality

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 managersconsulting engineersengineers as expert witnesses and advisors moral leadershipsample code of Ethics (Specific to a particular Engineering Discipline).

TEXT BOOKS

1. Mike Martin and Roland Schinzinger, "Ethics in engineering", McGraw Hill, New York 1996.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, " Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

REFERENCES

1. Charles D. Fleddermann, "Engineering Ethics", Pearson Education/ Prentice Hall, New Jersey, 2004 (Indian Reprint now available)
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, " Engineering Ethics – Concepts and Cases", Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available)
3. John R Boatright, " Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
Edmund G Seebauer and Robert L Barry, " Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.



P881 – WEB TECHNOLOGIES LAB.

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

<u>S. No.</u>	<u>Program(s)</u>
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 back ground 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 my table (same name)
- f) Print the file mytable
- g) Use the cut and paste commands to swap fields 2 and 3 of mytable. Call it my table (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 $HRA = Rs500$ and $DA = 98\%$ of the basicThe 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

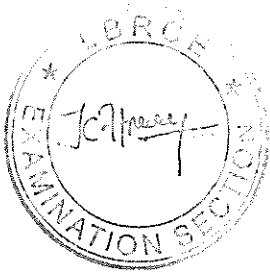
- a) Write shell script that takes a login name as command – line argument and reports when that person logs in
- b) Write a shell script which receives two file names as arguments. It should check whether the two file contents are same or not. If they are same then second file should be deleted.

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.



VII-SEMESTER



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

Network Security Essentials (Applications and Standards) by William Stallings Pearson Education.

REFERENCES

1. Cryptography and network Security, Third edition, Stallings, PHI/Pearson
2. Principles of Information Security, Whitman, Thomson.
3. Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH
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

J. Han, M. Kamber, "Data Mining: Concepts and Techniques", Harcourt India / Morgan Kauffman, 2001.

REFERENCES

1. SamAnahory,DennisMurry, "DataWarehousing in the real world", Pearson Education 2003.
2. DavidHand,HeikkiManila,PadhraicSymth,"Principles of Data Mining", PHI 2004.
3. W.H.Inmon,"Building the Data Warehouse", 3rd Edition, Wiley, 2003.
4. Paulraj Ponniah, "Data Warehousing Fundamentals", Wiley-Interscience Publication, 2003.



T258 – MOBILE COMMUNICATIONS

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

UNIT - I

The Cellular Concept: Cellular Architecture, The First Generation Cellular Systems, Second Generation Cellular Systems, Third Generation Cellular Systems, Wireless Local Loop, IEEE 802.16

UNIT - II

Ad Hoc Wireless Networks: Introduction, Issues in Ad Hoc Wireless networks. **Medium Access Control:** Issues in MAC, Design Goals of MAC, Classification of MAC protocols. **Contention Based MAC Protocols:** MACAW, Floor Acquisition Multiple Access Protocol, Busy Tone Multiple Access protocols. **Reservation Mechanisms:** D-PRMA, CATA. Scheduling Mechanisms: DPS

UNIT - III

Routing in Ad hoc Wireless networks: Issues in Routing, Classification of Routing Protocols. **Table Driven:** DSDV, WRP, STAR. **On Demand:** AODV, DSR, LAR. **Hybrid Routing:** ZRP, CEDAR. **Hierarchical Routing:** HSR, FSR.

UNIT - IV

Hybrid Wireless Networks: Introduction. **Next Generation Hybrid Network Architectures:** MCN, HWN, iCAR, SOPRANO, TWILL, A-GSM, UCAN, Open Issues in Next Generation Hybrid Architectures, Pricing in Hybrid Wireless Networks.

UNIT - V

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

TEXT BOOK

C. Siva Ram Murthy, B.S. Manoj, " Ad Hoc Wireless Networks: Architectures and Protocols", Pearson Education, 2004

REFERENCES

1. Stefano Basagni, Marco Conti, Silvia Giordano, Ivan Stojmenović, "Mobile ad hoc networking", IEEE Press, Wiley InterScience, 2004
2. Garg, "Wireless Networks Evolution: 2G to 3G", Pearson Education, 2002
3. Rappaport, " Wireless Communications: Principles and Practice" Second Edition, Pearson Education, 2009



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T310 – SOFTWARE PROJECT MANAGEMENT

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

UNIT - I

Conventional Software Management: The waterfall model, conventional software Management performance. **Evolution of Software Economics:** Software Economics, pragmatic software cost estimation. **Improving Software Economics:** Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections. **The old way and the new:** The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

UNIT - II

Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases. **Artifacts of the process:** The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts. **Model based software architectures:** A Management perspective and technical perspective.

UNIT - III

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

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

Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning. Use of Software (Microsoft Project) to Assist in Project Planning Activities

UNIT - IV

Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations. **Process Automation:** Automation Building blocks, The Project Environment. **Project Control and Process instrumentation:** The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

UNIT - V


Tailoring the Process: Process discriminants. **Future Software Project Management:** Modern Project Profiles, Next generation Software economics, modern process transitions.

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

TEXT BOOK

Software Project Management, Walker Royce: Pearson Education, 2009.




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REFERENCES

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw-Hill Edition.
2. Software Project Management, Joel Henry, Pearson Education.
3. Software Project Management in practice, PankajJalote, Pearson Education.2008.
4. Microsoft Office Project 2003 Bible, Elaine Marmel, Wiley Publishing Inc



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

Instruction level parallelism (ILP)- over coming data hazards- reducing branch costs -high performance instruction delivery- hardware based speculation- ILP software approach- compiler techniques- static branch protection - VLIW approach

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

1. Advanced Computer Architectures, Dezso Sima, Terence Fountain, Peter Kacsuk, Pearson.
2. Parallel Computer Architecture, A Hardware / Software Approach, David E. Culler, Jaswinder Pal singh with Anoop Gupta, Elsevier
3. H. Stone.Advanced Computer Architecture, Addison Wesley, 1989.
4. H. J. Siegel.Interconnection Network for Large Scale Parallel Processing, McGraw Hill, 1990.
5. K. Hwang and F. A. Briggs.Computer Architecture and Parallel Processing, McGraw Hill, 1985



T303 – SENSOR NETWORKS

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

UNIT - I

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

UNIT - II

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

UNIT - III

IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Location Management, Registration, Tunneling and Encapsulation, Route Optimization, DHCP. Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Transport Layer Protocols for Mobile Networks.

UNIT - IV

Basics of Wireless Sensors and Applications, The Mica Mote, Sensing and Communication Range, Design Issues, Energy consumption, Clustering of Sensors, Applications

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)
2. Ad Hoc and Sensor Networks, Theory and Applications, Carlos Corderio Dharma P. Aggarwal, World Scientific Publications / Cambridge University Press, March 2006 (unit-4 and Unit-5)

REFERENCES

1. Mobile Computing, Raj Kamal, Oxford University Press, 2007, ISBN: 0195686772
2. Adhoc Wireless Networks: Architectures and Protocols, C.Siva Ram Murthy, B.S.Murthy, Pearson Education, 2004



T104 – ADVANCED DATABASE MANAGEMENT SYSTEMS

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

UNIT - I

Query processing & optimization: Translating SQL Queries into Relational Algebra, Basic Algorithms for Executing Query Operations, Query Optimization Using Heuristics, Using Selectivity and Cost Estimates, Semantic Query optimization. **Database Recovery Techniques:** Recovery Techniques based on Deferred Update, Immediate update, Shadow Paging, ARIES Recovery Algorithm, Recovery in Multidatabase systems, Database Backup and Recovery from Catastrophic Failures. **Database security and Authorizations:** Discretionary Access Control Based on Privileges, Mandatory Access Control for Multilevel Security, Statistical Database Security.

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

Distributed DBMS Architecture: DBMS Standardization, Architectural Model, DDBMS Architecture, Global Directory Issues. **Distributed Database Design:** Alternative Design Strategies, Distribution Design Issues, Fragmentation, Allocation. **Semantic Data Control:** View management, Data Security, Semantic Integrity Control.

UNIT - IV

Overview of Query Processing: Query processing problem, Objectives, Complexity of Relational Algebra, Characterization of Query processors, Layers of Query processing. **Query Decomposition and data localization, Optimization of Distributed Queries:** Query optimization, Centralized Query optimization, Join Ordering in Fragment Queries, Distributed Query Optimization Algorithms.

UNIT - V

Introduction to Transaction Management: Definition, properties and Types of Transactions, Architecture. **Distributed Concurrency Control:** Serializability Theory, Taxonomy of Concurrency Control Mechanisms, Locking based concurrency control, Time-Stamp Based, Optimistic Algorithms, Deadlock Management, Relaxed Concurrency Control.

TEXTBOOKS

1. Elmasri & Navathe, 'Fundamentals of Database Systems', 3rd edition, Addison Wesley. (Unit-I, II)
2. Ozsu&Valduriez; "Principles of Distributed database systems"-2nd ed., Pearson AW (UNIT-III, IV, V)



REFERENCES

1. Fred R.McFadden, Jeffrey A.Hoffer, Jeffrey B.Prescott, 'Modern Database Management', 5th ed., Addison Wesley .
2. Raghuramakrishnan 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

Grid Computing Applications: Merging the Grid sources Architecture with the web Devices Architecture, Service Oriented Architecture, Web Service Architecture, XML related Technologies and their relevance, XML Messaging and Enveloping: SOAP-Processing Model, SOAP Modules, Service Message Description Mechanisms, Web Service Description Language (WSDL), Relationship between Web service and Grid Service, Web Service Interoperability, WSDL Document Structure

UNIT - IV

Technologies: Open Grid Service Architecture: Sample Use cases: Commercial Data Center (CDC), National Fusion Collaborators (NFC), Online Media and Entertainment, OGSA platform components: Native platform services and Transport Mechanisms, OGSA Hosting Environment, Core networking service: Transport and Security, **Open Grid Services Infrastructure Services(OGSI):** Introduction, OGSI Technical Details, Introduction to Service data concepts, Naming and Change management Recommendation, **OGSA Basic Services:** Common Management Model, Service Domains, Policy Architecture, Security Architecture, Metering and Accounting

UNIT - V

Grid Computing Tool Kits: Globus GT 3 Toolkit, Architecture, Programming model, High level services, **OGSI.Net middleware Solutions:** Frame work Implementation, Message Handlers, Attribute Based Programming.

TEXT BOOK

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

REFERENCES

1. Fran Bernm, Geoffrey Fox, Anthony Hey J.G., "Grid Computing: Making the Global Infrastructure a Reality", Wiley, USA, 2003
 2. Ian Foster, Carl Kesselman, "The Grid2: Blueprint for a New Computing Infrastructure". Morgan Kaufman, New Delhi, 2004
- Ahmar Abbas, "Grid Computing: Practical Guide to Technology and Applications", Delmar Thomson Learning, USA, 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 verses declarative knowledge, logic programming, forward verses backward reasoning, matching, control knowledge.

UNIT - V

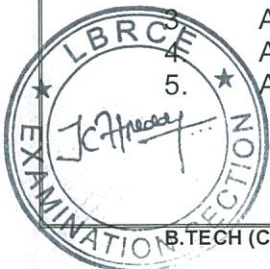
Reasoning: Probabilistic reasoning: Representing knowledge in an uncertain domain, the semantics of Bayesian networks, Dempster-Shafer theory, Fuzzy sets & fuzzy logics.

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
3. Artificial Intelligence A new Synthesis, Neil J. Nilsson, Morgan Kaufman
4. Artificial Intelligence, John. F. Luger, Pearson Ed.
5. Artificial Intelligence, Winston, Pearson Ed.




P859 – MOBILE COMMUNICATIONS LAB

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

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
9. Performance Evaluation of DVCS in ns2.
10. Performance Evaluation of Routing Protocols in ns2.




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P876 – SOFTWARE TESTING METHODOLOGIES LAB.

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

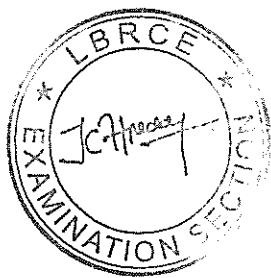
TEXTBOOKS

1. Software Testing Concepts and Tools, P.Nageswara Rao, dreamtech press.
2. Software Testing Tools, Dr. K.V.K.K. Prasad, dreamtech Press.
3. Software Testing with Visual Studio Team System 2008, S.Subashini, N.Satheesh kumar, SPD.




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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**

Management- Definition, Nature, importance and Functions of Management-Taylor's Scientific Management Theory, Fayol's Principles of Management, Contribution of Elton Mayo, Maslow, Herzberg, Douglas Mc Gregor. Basic concepts of Organization – Authority, Responsibility, Delegation of Authority, Span of Control, Departmentation and Decentralization-Organization Structures (Line organization, Line and staff organization, functional organization, Committee organization, matrix organization)

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**

Statistical Quality Control-Meaning, variables and attributes- X chart, R chart, C chart, P chart, (simple Problems), Acceptance Sampling, Sampling plans, Deming's contribution to quality. Materials Management-Objectives, Need for Inventory control, Purchase Procedure, Store records, EOQ, ABC Analysis, stock levels.

UNIT - IV**Human Resource Management**

HRM : Concepts of HRM, Basic functions of HR Manager: Manpower planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Job Evaluation and Merit Rating.

UNIT - V**Project Management**

Early techniques in Project Management- Network Analysis: Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing (simple problems).



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TEXT BOOK

Dr. Aryasri: Management Science, TMH, 4th edition, 2009.

REFERENCES

1. Koontz and Weihrich – Essentials of Management, TMH, 8th edition, 2010
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



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T311 – SOFTWARE QUALITY ASSURANCE

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

UNIT - I

Introduction to Software Quality: Quality , as a management Information System, Software Modeling and Commonly used Models, The Structure of the Model The three CPIs : Total Quality management Practice, The First Steps to Planning for Quality, the procedure.
SQA Framework: Software Quality Assurance, Components of Software Quality Assurance. Software Quality Assurance Plan: Steps to develop and implement a Software Quality Assurance Plan – Quality Standards: ISO 9000 and Companion ISO Standards, CMM, CMMI, PCMM, Malcolm Balridge, 3 Sigma, 6 Sigma

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

Fundamentals in Measurement theory. Establishment of a Software Quality Program: Scope, professional Ethics, A Minimal QA Effort. The Trillion Dollar Dilemma- The Year 2000 : A Y2K Life-cycle Model, Verification and Testing ,new Equipment, Lessons, Realities, the Programmer's paradigm, The Basic Assumptions Behind Development, A paradigm Shift, Locating and reusing Hidden Assets, Analysis and Design for Maintenance , Implementing and testing maintenance.

UNIT - IV

Software Quality Assurance Planning- An Overview : History, Contents and Structure of Standard, Possible Problems with Use of 730, Establishing Quality Goals, SQA Planning Software Productivity and Documentation – A case Study **Software Quality Assurance Management** : Organization, Quality Tasks, Responsibilities, A Minimal QA Effort, Factors Affecting the SQA Effort, The Critical Personnel Question, Fundamental requirements, Ways to kill Quality Assurance.

UNIT - V

Reviews and Audits : Overview , Procedural Description Template, Action Items , CMM Compatibility , ISO Compatibility , The Management Review Process, The technical Review Process, The Software Inspection Process, The Walkthrough Process, the Audit process, Document Verification



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TEXT BOOK

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

REFERENCES

1. Effective Methods for Software Testing, 2nd Edition
by *William E. Perry* , Second Edition, published by Wiley
2. Testing and Quality Assurance for Component-based Software, by Gao, Tsao and Wu, Artech House Publishers
3. Managing the Testing Process, by Rex Black, Wiley
4. Handbook of Software Quality Assurance, by G. Gordon Schulmeyer, James I. McManus, Second Edition, International Thomson Computer Press
5. Software Testing and continuous Quality Improvement, by William E. Lewis, Gunasekaran Veerapillai, Second Edition, Auerbach Publications
6. Metrics and Models for Software Quality Engineering, by Stephen H. Kan, by Pearson Education Publication




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T257 – MIDDLEWARE TECHNOLOGIES

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

UNIT - I

Introduction to client server computing: Evolution of corporate computing models from centralized to distributed computing, client server models. Benefits of client server computing, pitfalls of client server programming.

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


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REFERENCES

1. Java programming with CORBA 3rd Edition, G.Brose, A Vogel and K.Duddy, Wiley-dreamtech, India John wiley and sons
2. Distributed Computing, Principles and applications, M.L.Liu, Pearson Education
3. Client/Server Survival Guide 3rd edition Robert Orfali Dan Harkey & Jeri Edwards, John Wiley & Sons
4. Client/Server Computing D T Dewire, TMH.
5. IBM Webspere Starter Kit Ron Ben Natan Ori Sasson, TMh, New Delhi
6. Programming C#, Jesse Liberty, SPD-O'Reilly.
7. C# Preciesely 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



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T214 – HUMAN COMPUTER INTERACTION

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

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

Screen Designing : Design goals – Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation information simply and meaningfully – information retrieval on web – statistical graphics – Technological consideration in interface design.

UNIT - IV

Windows – New and Navigation schemes selection of window, selection of devices based and screen based controls.

UNIT - V

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

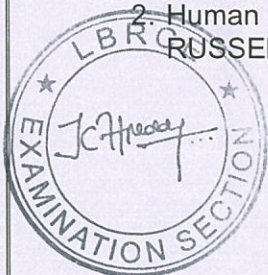
Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

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.



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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

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

UNIT - III

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

UNIT - IV

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

UNIT - V

Behavioral Patterns: Chain of Responsibility, Command, Interpreter, Integrator, Mediator, Memento, Observer, State, Strategy, Template Method, Visitor, Discussion of Behavioral Patterns.

TEXT BOOK

Design Patterns By Erich Gamma, Pearson Education

REFERENCES

1. Pattern's in JAVA Vol-I By Mark Grand ,Wiley Dreamtech.
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.



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T209 – GREEN COMPUTING

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

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



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T305 – SERVICE ORIENTED ARCHITECTURE

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

UNIT I

Roots of SOA – Characteristics of SOA - Comparing SOA to client-server and distributed internet architectures – Anatomy of SOA- How components in an SOA interrelate - Principles of service orientation

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

Service oriented analysis – Business-centric SOA – Deriving business services-service modeling - Service Oriented Design– WSDL basics – SOAP basics – SOA composition guidelines – Entity-centric business service design – Application servicedesign – Taskcentric business service design

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:

1. Thomas Erl, “Service-Oriented Architecture: Concepts, Technology, and Design”, Pearson Education, 2005.

REFERENCES:

1. Thomas Erl, “SOA Principles of Service Design “(The Prentice Hall Service-Oriented Computing Series from Thomas Erl), 2005.
2. Newcomer, Lomow, “Understanding SOA with Web Services”, Pearson Education, 2005.
3. Sandeep Chatterjee, James Webber, “Developing Enterprise Web Services, An Architect’s Guide”, Pearson Education, 2005.
4. Dan Woods and Thomas Mattern, “Enterprise SOA Designing IT for Business Innovation” O’REILLY, First Edition, 2006.



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T138 – CLOUD COMPUTING

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

Infrastructure as a Service (IaaS): Virtual Machines Provisioning and Migration Services, On the Management of Virtual Machines for Cloud Infrastructures, Enhancing Cloud Computing Environments using a Cluster as a Service, Secure Distributed Data Storage in Cloud Computing

UNIT - III

Platform and Software as a Service (Aphasias): Aneka – Integration of Private and Public Clouds, Comet Cloud: An Autonomic Cloud Engine, T-Systems' Cloud-Based Solutions for Business Applications, Workflow Engine for Clouds, Understanding Scientific Applications for Cloud Environments, The Map Reduce Programming Model and Implementations

UNIT - IV

Monitoring and Management: An Architecture for Federated Cloud Computing, SLA Management in Cloud Computing: A Service Provider's Perspective, Performance Prediction for HPC on Clouds

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



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T259 – MULTIMEDIA AND APPLICATION DEVELOPMENT

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

UNIT - I

Fundamental concepts in Text and Image: Multimedia and hypermedia, world wide web, overview of multimedia software tools. Graphics and image data representation graphics/image data types, file formats. Fundamental concepts in video and digital audio: Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.

UNIT - 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

Application Development: An OOP Application Frame work, Using Components with Action Script MovieClip Subclasses. Multimedia data compression: Lossless compression algorithm: Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Lossless Image Compression,

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

Multimedia Networks: Basics of Multimedia Networks, Multimedia Network Communications and Applications : Quality of Multimedia Data Transmission, Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on-Demand(MOD).

TEXT BOOKS

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

REFERENCES

1. Digital Multimedia, Nigel chapman and jenny chapman, Wiley-Dreamtech
2. Macromedia Flash MX Professional 2004 Unleashed, Pearson.



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Lakireddy Bali Reddy College of Engineering
MYLAVARAM, Krishna Dist, 521230.