

**ACADEMIC REGULATIONS
COURSE STRUCTURE
& DETAILED
SYLLABUS**

for

**Bachelor of Technology
(Information Technology)**

(Effective for the students admitted from the Academic Year 2011-12)



**GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Autonomous Institute under JNTU Hyderabad) Bachupally,
Kukatpally, Hyderabad - 500 090**





Bachelor of Technology (B.Tech) degree of Jawaharlal Nehru Technological University Hyderabad (JNTUH) shall be conferred on a candidate who is admitted to the programme and fulfils all the requirements for the award of the degree.

Academic Regulations GR11 for B.Tech (Regular)

(Effective for the students admitted into I year from the Academic Year 2011-12)

1. Admissions

Admission to the B.Tech programme shall be made subject to the eligibility and qualifications prescribed by the University from time to time. Admissions shall be made either on the basis of the merit rank obtained by the qualifying candidate at EAMCET conducted by APSCHE or on the basis of any other order of merit approved by the University, subject to reservations as prescribed by the Government from time to time.

2. Award of Degree

A student will be declared eligible for the award of the B. Tech. Degree if he/ she fulfils the following academic requirements:

- (a) Pursued a course of study for not less than four academic years and not more than eight academic years.
- (b) Registered for **200 credits** and secured **200 credits**. The marks obtained in all 200 credits shall be considered for the calculation of the final percentage of marks.
- (c) Students, who fail to fulfil all the academic requirements for the award of the degree within eight academic years from the year of their admission, shall forfeit their seat in B.Tech course.

3. Courses of study

(a) Courses offered

The following courses of study are offered at present for



Branch No.	Branch (Code)
01	Civil Engineering (CE)
02	Electrical and Electronics Engineering (EEE)
03	Mechanical Engineering (ME)
04	Electronics and Communication Engineering (ECE)
05	Computer Science and Engineering (CSE)
11	Biomedical Engineering (BME)
12	Information Technology (IT)
23	Biotechnology Engineering (BT)

specializations for B. Tech.

(b) There shall be no branch transfer after the completion of admission procedures.

4. Medium of Instruction

The medium of instruction (including examinations and reports) shall be English.

5. Course Pattern

- (a) Each Academic year of study (I, II, III and IV Years) is divided into two semesters.
- (b) Minimum number of instruction days in each semester is 90.

6. Attendance Requirements

- (a) A student shall be eligible to appear for the end semester examinations if he/ she acquires a **minimum of 75% of attendance in aggregate of all the subjects** in the semester.
- (b) Condonation of shortage of attendance in aggregate **up to 10% (65% and above and below 75%)** in a semester may be granted based on medical grounds with sufficient medical proof. A committee headed by Dean (Academic Affairs) shall be the deciding authority for granting the condonation.
- (c) Students who have been granted condonation shall pay a fee as



decided by the Academic Council.

(d) Shortage of Attendance **below 65% in aggregate** shall in **NO** case be condoned.

	End exams (External)	Internal	Total
Theory	50	25	75
Practical	50	25	75
Drawing	75	25	100
Industrial Mini Project	50	25	75
Comprehensive Viva	100	-	100
Seminar	-	50	50
Project			

(e) Students whose shortage of attendance is not condoned in any semester or are detained and are not eligible to take their end examination of that semester. They may seek re-registration for that semester when offered next with the academic regulations of the batch into which he/she gets re-admitted.

7. **Paper setting, Evaluation of Answer Scripts, Marks and Assessment**

(a) The following is the **maximum** marks distribution for the subjects.

(b) Paper setting and Evaluation of the Answer Scripts shall be done as per the procedures laid down by the Academic Council from time to time.

(c) For internal evaluation in theory subjects, there shall be **2 mid term examinations** during the semester. Each mid term examination consists of an **objective paper for 10 marks (20 questions)** and **subjective paper for 15 marks** (three out of four questions) with total **duration of 110 minutes (20 minutes** for objective and **90 minutes** for subjective paper). Objective paper shall be set with multiple choice questions, true/false, fill-in-the blanks, matching type questions, etc. The total marks secured by the student in each mid term examination for **25 marks** is considered and **the better of the two** mid term examinations shall be taken as the final marks secured by each candidate as internal marks for the subject.

(d) For internal evaluation in Practical's:

(i) Laboratory (including English laboratory): Marks: 25.

Day-to-day work in the laboratory: **15 marks.**

Two internal tests: Each of **10 marks** (conducted by the



concerned laboratory Faculty members). The **better of the two** internal tests shall be considered for the award of marks.

The end examination shall be conducted at the end of the semester with the laboratory Faculty as internal examiner and an external examiner as appointed by the Controller of Examinations.

(ii) Engineering Graphics: 25 marks

Day-to-day work: 15 marks.

Two internal tests: Each of 10 marks. The **better of the two** internal tests shall be considered for the award of marks.

(e) End Semester examinations

This examination shall be set to 75 marks with time duration of 3 hours. The pattern of the examination paper shall be as per the guidelines of the Academic Council.

(f) (i) Industrial Mini Project:

Industrial Mini Project is to be taken up in collaboration with Industry during III year. At the end of the semester, Mini Project shall be displayed as a road show at the department level for the benefit of all students and staff. The same is to be evaluated by an internal committee of HOD, Supervisor and senior faculty member for **10** marks. The supervisor continuously assesses the student for **15** marks, ensuring that each student puts in effort equivalent of at least **80** periods. The mini project shall be submitted in a report form and should be presented before a committee consisting of an External Examiner, Head of Department, Supervisor and a senior faculty member. The report along with the presentation for **50 marks**.

(ii) Comprehensive Viva:

The comprehensive Viva shall be held in IV year II semester. The Viva shall be conducted by a Committee consisting of HOD and two senior faculty members of the department. The student shall be assessed for his/her understanding of various subjects studied during the course of study. The Viva shall be evaluated for **100 marks**.

(iii) Seminar:

The seminar presentation shall be held in IV year II semester. For the seminar, the student shall collect information on a



specialized Topic and prepare a technical report and submit to the department. The student's seminar shall be evaluated by a Committee consisting of HOD, seminar supervisor and a senior faculty member of the department. The student shall be assessed for his/her understanding of the topic, its application and its relation with various subjects studied during the course of study. The seminar shall be evaluated for **50 marks**.

(g) **Project:**

Out of **200 marks** for the project work, **50 marks** shall be for internal evaluation and **150 marks** for the End Semester Examination. A Report (in the form required by the Department) shall be submitted by the student before the date announced by the HOD. The End Semester Examination on the project submitted is a Viva voce examination conducted by the same Committee appointed for Industrial mini project. In addition, the Project supervisor shall also be a member of the Committee. The topics for industry oriented mini project, seminar and project work shall be different from each other. The evaluation of the project work shall be done at the end of IV year. The Internal Evaluation shall be based on the two seminars given by each student on the topic of his/ her project.

8. Recounting of marks in the end examination answer books

A student can request for re-counting of his/her answer book on payment of a prescribed fee.

9. Re-evaluation of the answer books

A student can request for re-evaluation of his/her answer book on payment of a prescribed fee.

10. Supplementary examinations

A student who has failed in an End semester examination can appear in a supplementary examination, the schedule of which shall be announced by the Institute separately. **The student has to clear all the backlog papers within the stipulated time of eight years.**



11. Phase	Minimum Credits		No. of Examinations			
	Discipline	Practicals	I	II	III	IV
End of I st year	35	3	2 Regular 1 Supply	2 Regular 1 Supply	2 Regular	1 Regular
III to IV year	62	6	3 Regular 2 Supply	2 Regular 2 Supply	2 Regular 1 Supply	1 Regular

The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in Para 6.

(a) A student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory or laboratories, if he/ she secures **not less than 35%** (26 out of 75 or 17 out of 50) of marks in the end examination and **a minimum of 40% of marks** in the sum total of the internal evaluation and end examination taken together.

Class Awarded	% of Marks Secured
FIRST CLASS with DISTINCTION	Marks $\geq 70\%$
(b) FIRST CLASS	60% \leq Marks $< 70\%$
SECOND CLASS	50% \leq Marks $< 60\%$
PASS CLASS	40% \leq Marks $< 50\%$

13. Award of Degree or Class

After a student satisfies all the requirements prescribed for the completion of the Degree and becomes eligible for the award of B.Tech Degree by JNTUH, he/ she shall be placed in one of the following four classes (the marks awarded are from the aggregate marks secured for the 200 credits):



14. Withholding of results

The result of a student shall be withheld if (i) he/ she is involved in malpractices and is not cleared of the malpractice, (ii) disciplinary proceedings are pending against him/ her, or for any other reason approved by the Academic Council.

15. Transfer of students from the Constituent Colleges of JNTUH or from other Colleges/ Universities

Transfer of students from the Constituent Colleges of *JNTUH* or from other Colleges/ Universities shall be considered only on case-to-case basis by the Academic Council of the Institute.

16. Transitory Regulations

Students who have discontinued or have been detained for want of attendance, or who have failed after having undergone the Degree Programme, may be considered eligible for readmission to the same or equivalent subjects as and when they are offered.

17. General Rules

- (a) The academic regulations should be read as a whole for the purpose of any interpretation.



- (b) In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Academic Council is final.
- (c) In case of any error in the above rules and regulations, the decision of the Academic Council is final.
- (d) The College may change or amend the academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the College.

Phase	Minimum Credits	No. of Examinations		
		II-I	II-II	III – I
III to IV year	37	2 Regular 1 Supply	1 Regular 1 Supply	1 Regular

Class Awarded	% of Marks Secured
FIRST CLASS with DISTINCTION	Marks \geq 70%
FIRST CLASS	$60\% \leq$ Marks $<$ 70%

1. All regulations as applicable for B.Tech. Four year degree course (Regular) will hold good for B.Tech. (Lateral Entry Scheme) except for the following rules:

(a) Pursued a course of study for not less than three academic years and not more than six academic years (para 2(a)).

(b) Registered for 150 credits and secured 150 credits. The marks



GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
B.Tech (INFORMATION TECHNOLOGY)
COURSE STRUCTURE

I B.Tech (IT)**I Semester**

Group	Subject code	Subject	L	T	P	Cre dits	Marks	Int	Ext
BAS	GR11A1001	Mathematics-I	4	1		4	100	25	75
EAS	GR11A1003	Computer Programming & Data Structures	4	1		4	100	25	75
BAS	GR11A1004	Engineering Physics	3	1		3	100	25	75
EAS	GR11A1005	Basic Electrical and Electronics Engineering	3	1		3	100	25	75
HSS	GR11A1002	English	3	1		3	100	25	75
EAS	GR11A1006	Computer Programming and Data Structure Lab			6	3	75	25	50
BAS	GR11A1007	Engineering Physics Lab			3	3	75	25	50
EAS	GR11A1008	Engineering Work Shop			3	2	75	25	50
		Total	17	5	12	25	725		

I B.Tech (IT)**II Semester**

Group	Subject code	Subject	L	T	P	C	Marks	Int	Ext
BAS	GR11A1010	Mathematics-II	4	1		4	100	25	75
BAS	GR11A1018	Mathematics-III	4	1		4	100	25	75
BAS	GR11A1011	Engineering Chemistry	3	1		3	100	25	75
EAS	GR11A1009	Environmental Science	3	1		3	100	25	75
EAS	GR11A1012	Engineering Graphics	3		4	3	100	25	75
EAS	GR11A1013	IT Workshop			3	2	75	25	50
BAS	GR11A1014	Engineering Chemistry Lab			3	3	75	25	50
HSS	GR11A1015	English Lab			3	3	75	25	50
		Total	17	4	13	25	725		



II B.Tech (IT)

I Semester

Group	Subject code	Subject	L	T	P	C	Marks	Int	Ext
DC	GR11A2056	Mathematical Foundations of Computer Science	4	1		4	100	25	75
DC	GR11A2075	Data Structures Through C ++	4	1		4	100	25	75
BAS	GR11F5004	Probability and Statistics	4	1		4	100	25	75
IE	GR11A2077	Digital Logic Design	3	1		3	100	25	75
DC	GR11F5021	Database Management Systems	4	1		4	100	25	75
DC	GR11A2078	Data Structures Through C ++ Lab			3	2	75	25	50
DC	GR11A2079	Database Management Systems Lab			3	2	75	25	50
IE	GR11A2046	Digital Electronics Lab			3	2	75	25	50
		Total	19	5	9	25	725		

II B.Tech (IT)

II Semester

Group	Subject code	Subject	L	T	P	C	Marks	Int	Ext
DC	S	Computer Organization	4	1		4	100	25	75
DC	GR11A2083	Operating System	4	1		4	100	25	75
DC	GR11A2052	Object Oriented Programming through java	4	1		4	100	25	75
DC	GR11A2084	Software Engineering	3	1		3	100	25	75
DC	GR11A2082	Design and Analysis of Algorithms	4	1		4	100	25	75
DC	GR11A2085	Operating System Lab			3	2	75	25	50
DC	GR11A2055	Object Oriented Programming through Java Lab			3	2	75	25	50
DC	GR11A2086	Web Designing Lab			3	2	75	25	50
		Total	19	5	9	25	725		

MATHEMATICS - I

Objectives:

Mathematics is the backbone of all Engineering disciplines. Mathematics – I is common to All Branches except BT. Mathematics – I provides all the basic requirements for application of Mathematics to the Engineers. At the end of the course, the students will be able to apply the concepts of (i) Integration over two and three dimensions, (ii) Vector fields and Vector integration theorems, (iii) Matrix theory, in their fields of study.

L: 4, T: 1, Credits: 4

Total Marks: 100 (Int: 25, Ext: 75)

UNIT - I

Matrices: Real matrices – Symmetric, skew-symmetric, orthogonal matrices. Complex matrices: Hermitian, skew-Hermitian, Unitary matrices. Elementary row transformations, rank, echelon form, normal form. Solution of linear systems: Consistency and inconsistency of a system of equations.

Eigen values and eigen vectors: Eigen values and eigen vectors of a matrix and their properties. Modal and spectral matrices. Condition number of a matrix. Cayley-Hamilton theorem (without proof) and its application to find the inverse and powers of a matrix. Diagonalisation of a matrix.

Eigen values and eigenvectors of complex matrices and their properties.

UNIT- II

Linear Transformations and quadratic forms: Linear transformation: Orthogonal transformation. Singular value decomposition of a matrix. Quadratic forms: Definition, positive definite, negative definite, indefinite, semi-definite quadratic forms. Rank, index and signature of a quadratic form. Sylvester law. Reduction of



a quadratic form to a canonical form.

UNIT –III

Functions of a single and several variables: Rolle's theorem, Lagrange's mean value theorem, Cauchy's mean value theorem, generalized mean value theorem (all theorems without proof).

Radius, center and circle of curvature. Evolutes and envelopes.

Functional dependence – Jacobian - Maxima and minima of functions of two variables with and without constraints.

UNIT -IV

Applications of Integration:Representation of curves and surfaces in cartesian, parametric and polar co-ordinates. Integral representation of lengths, areas, volumes and surface areas of revolution.

Double integrals: Evaluation of double integrals, changing the order of integration, change of variables, evaluation of plane areas by double integration.

Triple integrals: Evaluation of triple integrals, evaluation using cylindrical and spherical polar co-ordinates, evaluation of the volume of a solid using triple integration.

UNIT –V

Vector Calculus & Tensors:Gradient, divergence, curl and their related properties. Potential function. Line integral - work done - conservative fields - Green's theorem in a plane. Surface integrals - Flux of a vector valued function - Stoke's and Gauss divergence theorems (statement and their verification)-Introduction to tensors.

Text Books:

1. Advanced Engineering Mathematics: R.K. Jain and S.R.K. Iyengar. Narosa Publishing House.
2. Advanced Engineering Mathematics: Erwin Kreyszig, Wiley.



3. Higher Engineering Mathematics: B.S. Grewal, Khanna Publications.
4. Schaum's outline series on Vector Analysis. Linear Algebra.

Reference Books:

1. Schaum's outline series on Linear Algebra.
2. Introduction to Linear Algebra. Gilbert Strang.

**COMPUTER PROGRAMMING AND DATA STRUCTURES Objectives (1) To**

express algorithms and draw flowcharts in a language independent manner, thus exemplifying the professional ethics (2) To provide the skills necessary for the effective application of computation and computer programming in engineering applications (3) To understand the concepts of C-programming language such as branching, loops, functions, input/output, arithmetic rules, arrays, pointers and files

L: 4, T: 1, Credits: 4**Total Marks: 100 (Int: 25, Ext: 75)****UNIT -I**

Introduction to Computers: System Software, Program Developing Steps, Algorithms, Flowcharts. **Introduction to C:** Structure of C- Program, Variable Names, Data Types, Constants, Operators, Type Conversions, Expressions, Precedence and Order of Evaluation. **Managing I/O:** Input-Output Statements, formatted I/O.

UNIT- II

Control Flow: Statements and Blocks, if, switch statements, **Loops:** while, do-while, for, break and continue, goto and Labels.

Arrays and Strings: Introduction, One- dimensional arrays, Declaring and initializing Arrays, Multidimensional arrays, Strings, String Handling Functions.

UNIT- III

Functions: Introduction, Function Definition, Function Declaration, Return values and their Types, Function Calls, Categories of Functions, nesting of Functions, Recursion, Passing arrays to Functions, Storage Classes.

Structure: Basics of Structures, Structures to Functions, Arrays of Structures, Structures with in Structures, Arrays with in structures, Unions.



UNIT -IV

Pointers: Pointers and Addresses, Pointers and function Arguments, Pointers and arrays, Address Arithmetic, Character pointers and Functions, Pointer Arrays, Pointers to Structures, Pointers to Pointers, Command Line Arguments.

Files: Introduction, Types of Files, File Access Functions, I/O on Files, Random Access to Files, Error Handling.

UNIT- V

Sorting: Bubble sort, Merge sort, Insertion Sort, Selection Sort, Quick Sort.

Searching: Linear Search, Binary Search.

Introduction to Data Structures: Basics of Linear and Non-Linear Data structures.

Text Books

1. The C Programming Language, BRIAN W.KERNIGHAN Dennis M.Ritchie, Second Edition, PHI.
2. Computer Programming and Datastructures by E Balaguruswamy, published by Mc GrawHill.

Reference Books

1. Let Us C-Yashwanth Kanetkar, 10th Edition, BPB Publications.
2. C & Data structures - P. Padmanabham, B.S. Publications.
3. Computer science, A structured programming approach using C, B.A. Forouzan and R.F. Gilberg, Third edition, Thomson.
4. C Programming with problem solving, J.A. Jones & K. Harrow, Dreamtech Press.
5. Programming in C - Stephen G. Kochan, III Edition, Pearson Education.
6. Data Structures and Program Design in C, R.Kruse, C.L. Tondo, BP



Leung, Shashi M, Second Edition, Pearson Education.

7. Programming in C and Data Structures J.R. Hanly, Ashok N Kamthane and A Ananda Rao, Pearson Education.



ENGINEERING PHYSICS

Objectives: (1) To equip the student the nature and concept of various solids and to gain the knowledge of various properties of materials. (2) To make the student learn the classification of materials based on band theory of solids and the electrical and magnetic properties of various materials. (3) To gain knowledge about the various application of lasers and fiber optics and to gain familiarity with the latest developments and trends in nanotechnology

L: 3, T: 1, P: 0; Credits: 3

Total Marks: 100 (Int: 25, Ext: 75)

UNIT – I

Crystal Structure: Cohesive energy of a solid, Calculation of Cohesive Energy of Ionic crystal, Seven Crystal Systems, Atomic Radius, Co-ordination Number and Packing Factor of SC, BCC, FCC.

Defects in Crystals: Point Defects: Vacancies, Substitution, Interstitial, concentration of Frenkel and Scotty Defects; Qualitative treatment of line (Edge and Screw Dislocations) Defects, Burger's Vector, Surface Defects and Volume Defects.

Principles of Quantum Mechanics: Waves and Particles, de Broglie Hypothesis, Matter Waves, Davisson and Germer's Experiment, G. P. Thomson Experiment, Heisenberg's Uncertainty Principle, Schrödinger's Time Independent Wave Equation -Physical Significance of the Wave Function -Particle in One Dimensional Potential Box.

UNIT- II

Electron theory of Metals: Classical free electron theory, derivation of ohm's law, Mean free path, relaxation time and drift velocity, failures of quantum free electron theory, Fermi-Dirac distribution, Fermi energy, electron scattering and origin of electrical resistance.

Band Theory of Solids: Electron in a periodic Potential, Bloch Theorem, Kronig-Penny Model (Qualitative Treatment), Origin of Energy Band Formation in Solids, Classification of Materials into Conductors, Semi Conductors & Insulators,



Effective Mass of an Electron and Concept of a Hole.

Semiconductor Physics: Fermi Level in Intrinsic and Extrinsic Semiconductors, Intrinsic Semiconductors and Carrier Concentration, Extrinsic Semiconductors and Carrier Concentration, Equation of Continuity, Direct & Indirect Band Gap Semiconductors, Hall Effect.

UNIT- III

Dielectric Properties: Electric Dipole, Dipole Moment, Dielectric Constant, Polarizability, Electric Susceptibility, Displacement Vector, Electronic, Ionic and Orientation Polarizations and Calculation of Polarizabilities -Internal Fields in Solids, Clausius -Mossotti Equation, Piezo-electricity, Pyro-electricity and Ferro-electricity.

Magnetic Properties: Permeability, Field Intensity, Magnetic Field Induction, Magnetization, Magnetic Susceptibility, Origin of Magnetic Moment, Bohr Magneton, Classification of Dia, Para and Ferro Magnetic Materials on the basis of Magnetic Moment, Domain Theory of Ferro Magnetism on the basis of Hysteresis Curve, Soft and Hard Magnetic Materials, Properties of Anti-Ferro and Ferri Magnetic Materials, Ferrites and their Applications.

UNIT- IV

Lasers: Characteristics of Lasers, Spontaneous and Stimulated Emission of Radiation, Meta-stable State, Population Inversion, Lasing Action, Einstein's Coefficients and Relation between them, Ruby Laser, Helium-Neon Laser, Semiconductor Diode Laser, Applications of Lasers.

Fiber Optics: Principle & construction of Optical Fiber, Acceptance Angle and Acceptance Cone, Numerical Aperture, Types of Optical Fibers and Refractive Index Profiles, Attenuation in Optical Fibers, Application of Optical Fibers.

UNIT- V

Nanotechnology: Origin of Nanotechnology, Nano Scale, Surface to Volume Ratio, Bottom-up Fabrication: Sol-gel, Precipitation, Combustion Methods; Top-down Fabrication: Chemical Vapor Deposition, Physical Vapor Deposition, Carbon nano tubes, Applications.



Text Books:

1. Engineering Physics: P.K.Palaniswamy, Scitech Publishers.
2. Engineering Physics: S.O.Pillai, New age International.
3. Applied Physics: T.Bhima Sankaram,G Prasad,BS Publications

Reference Books:

1. Solid State Physics: Charles Kittel, Wiley & Sons (Asia) Pte Ltd.
2. Solid State Physics: S.O.Pillai, New age International.
3. Optical Electronics: A.J Ghatak and K.Thyagarajan, Cambridge University Press.



BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Objectives: At the end of the course the student is expected to

1. Know the Fundamental Principles of Electrical and Electronics
2. Understand and apply the Basics of Diodes, Transistors, resistors, Inductors, Capacitors etc and apply them to understand various circuits.

L: 3, T: 1, Credits: 3

Total Marks: 100 (Int: 25, Ext: 75)

UNIT -I

Electrical and Single Phase AC Circuits

Electrical Circuits - R-L-C Parameters, Voltage and Current Independent and Dependent Sources, Source Transformation – V–I relationship for Passive elements, Kirchoff's Laws, Network reduction techniques – series, parallel, series parallel, star-to-delta, delta-to-star transformation, Nodal Analysis.

Single Phase AC Circuits - R.M.S. and Average values, Form Factor, steady state analysis of series, Parallel and Series parallel Combinations of R, L and C with Sinusoidal excitation, concept of reactance, Impedance, Susceptance and Admittance – phase and phase difference, Concept of Power Factor, j-notation, complex and Polar forms of representation.

UNIT -II

Resonance and Network Theorems

Resonance – series resonance and parallel resonance circuits, concept of bandwidth and Q factor, Locus Diagrams for RL, RC and RLC Combinations for Various Parameters.

Network Theorems - Thevenin's, Norton's, Maximum Power Transfer,



Superposition, Reciprocity, Tellegen's, Millman's and Compensation theorems for DC and AC excitations.

UNIT -III

P-N Junction Diode & Diode Circuits

P-N Junction Diode: Diode equation, Energy Band diagram, Volt-Ampere characteristic, Temperature dependence, Ideal versus practical, Static and dynamic resistances, Equivalent circuit, Load line analysis, Diffusion and Transition Capacitances.

Rectifiers and Filters: The P-N junction as a rectifier - A Half Wave Rectifier, Ripple Factor, Full Wave Rectifier, Bridge Rectifier, Harmonic components in Rectifier Circuits, Filters – Inductor Filters, Capacitor Filters, L-section Filters, π -section Filters.

UNIT-IV

Bipolar Junction Transistor

Bipolar Junction Transistor (BJT) : Construction, Principle of Operation, Symbol, Amplifying Action, Common Emitter, Common Base and Common Collector configurations.

Transistor Biasing And Stabilization : Operating point, DC & AC load lines, Biasing - Fixed Bias, Emitter Feedback Bias, Collector to Emitter feedback bias, Voltage divider bias, Bias stability, Stabilization against variations in V_{BE} and β , Bias Compensation using Diodes and Transistors.

Transistor Configurations : BJT modeling, Hybrid model, Determination of h-parameters from transistor characteristics, Analysis of CE, CB and CC configurations using h-parameters, Comparison of CE, CB and CC configurations.

UNIT-V

Junction Field Effect Transistor & Special Purpose Devices

Junction Field Effect Transistor: Construction, Principle of Operation, Symbol, Pinch-Off Voltage, Volt-Ampere Characteristic, Comparison of BJT and FET, Small Signal Model, Biasing FET.



Special Purpose Devices: Breakdown Mechanisms in Semi Conductor Diodes, Zener diode characteristics, Use of Zener diode as simple regulator Principle of operation and Characteristics of Tunnel Diode (with the help of Energy band diagram) and Varactor Diode, Principle of Operation of SCR.

Text Books

1. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, PEI/PHI, 9th Ed, 2006.
2. Millman’s Electronic Devices and Circuits – J.Millman and C.C.Halkias, Satyabratajit, TMH, 2/e, 1998.
3. Engineering Circuit Analysis- by William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 6th edition.

Reference Books

1. Introduction to Electronic Devices and Circuits-Rober T. Paynter, Pearson Education.
2. Electronic Devices and Circuits -- K. Lal Kishore, B.S. Publications, 2nd Edition, 2005.
3. Electronic Devices and Circuits – Anil K. Maini, Varsha Agarwal – Wiley India Pvt. Ltd. 1/e 2009.
4. Linear circuit analysis (time domain phasor and Laplace transform approaches)- 2nd edition by Raymond A. DeCarlo and Pen-Min-Lin, Oxford University Press-2004.
5. Network Theory by N.C.Jagan & C.Lakshminarayana, B.S. Publications.
6. Network Theory by Sudhakar, Shyam Mohan Palli, TMH.



ENGLISH

L: 3, T: 1, P: 0; Credits: 3

Total Marks: 100 (Int: 25, Ext: 75)

Objectives: (1) to improve English language proficiency of the students with an emphasis on LSRW skills (2) to equip the students study the academic subjects with better perspective through the theoretical and practical components of the designed syllabus (3) To al and informal situationsdevelop the study skills and communication skills in form

UNIT- I

1. Sir C.V. Raman: Subhasree Desikhan, from “Enjoying Everyday English”.
2. Mother Teresa: From, “Inspiring Speeches and Lives”.

UNIT- II

1. The Connoisseur: Nergis Dalal, from “Enjoying Everyday English”.
2. Sam Pitroda: From “Inspiring Speeches and Lives”.

UNIT- III

1. The Cuddlore Experience: Anu George, from “Enjoying Everyday English”.
2. Amartya Kumar Sen; From “Inspiring Speeches and Lives”.

UNIT- IV

1. Bubbling Well Road: Rudyard Kipling, from “Enjoying Everyday



English”.

2. I Have a Dream; Martin Luther King Jr., from “Inspiring Speeches and Lives”.

UNIT –V

Exercises on

1. Reading and writing Skills
2. Reading Comprehension
3. Situational Dialogues
4. Letter Writing
5. Essay writing

Practice exercises on remedial grammar covering

1. Common Errors in English
2. Subject-Verb Agreement
3. Use of Articles
4. Use of Prepositions
5. Tense and Aspect

Vocabulary Development

1. Synonyms & Antonyms
2. One-Word Substitutes
3. Prefixes & Suffixes
4. Idioms and Phrases
4. Pairs of Words Often Confused

**COMPUTER PROGRAMMING AND DATA STRUCTURE LAB Objectives:**

(1) To introduce the fundamentals of C programming language and develop the skills for solving problems (2) To develop the proficiency in writing programs in a procedural programming language (3) To use the concepts of searching and sorting for solving real-time problems

L: 0, T: 0, P: 6; Credits: 3**Total Marks: 75 (Int: 25, Ext: 50)****Task- I:**

- a) Write a C program to find the sum of individual digits of a positive integer.
- b) A Fibonacci Sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
- c) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

Task-II:

- a) Write a C program to calculate the following Sum: $\text{Sum} = 1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10!$
- b) Write a C program to find the roots of a quadratic equation using if-else.

Task -III:

- a) Write a C programs that use both recursive and non-recursive functions
 - i) To find the factorial of a given integer.
 - ii) To find the GCD (greatest common divisor) of two given integers.

**Task - IV:**

a) The total distance travelled by a vehicle in 't' seconds is given by distance $S = u*t + 1/2at^2$ where 'u' and 'a' are the initial velocity (m/sec.) and acceleration (m/sec²). Write a C program to find the distance travelled by a vehicle at regular intervals of time given the values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of 'u' and 'a'.

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

Task - V:

a) Write a C program to find both the largest and smallest number in a list of integers.

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

- i) Addition of Two Matrices
- ii) Multiplication of Two Matrices

Task - VI:

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

- i) To insert a sub-string in to given main string to a given position.
- ii) To delete n Characters from a given position in a given string.

b) Write a C program to determine if the given string is a palindrome or not?

Task - VII:



- a) Write a C program that displays the position or index in the string S where the string T begins, or - 1 if S doesn't contain T.
- b) Write a C program to count the lines, words and characters in a given text.

Task - VIII:

- a) Write a C program to generate Pascal's triangle.
- b) Write a C program to construct a pyramid of numbers.

Task - IX:

- a) Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression: $1+x+x^2+x^3+\dots+x^n$

For example: if n is 3 and x is 5, then the program computes $1+5+25+125$.

Print x, n, the sum perform error checking. For example, the formula does not make sense for negative exponents (-), if n is less than 0. Have your program to print an error message if $n \leq 0$, without computing the sum.

- b) Write a C program that uses functions to perform the following operations:
 - i) Addition of two complex numbers
 - ii) Multiplication of two complex numbers(Note: represent complex number using a structure.)

Task - X:

- a) Write a C Program to display the contents of a file.
- b) Write a C Program merging of two files in a single file.
- c) Write a C Program to append data into a file.



Task - XI:

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

Task - XII:

- a) Write a C Program to Search for a given element using Linear & Binary Search Techniques.
- b) Write a C Program to Sort a given list of integers using Bubble Sort Technique.

Task - XIII:

- a) Write a C Program to Sort a given list of integers using Merge Sort Technique.
- b) Write a C Program to Sort a given list of integers using Insertion Sort Technique.

Task - XIV:

- a) Write a C Program to Sort a given list of integers using Quick Sort Technique.
- b) Write a C Program to Sort a given list of integers using Selection Sort Technique.



ENGINEERING PHYSICS LABORATORY

Objectives: (1) To enable the student to draw the relevance between the theoretical knowledge and to imply it in a practical manner with respect to analyze various electronic circuits and its components. (2) To analyze the behavior and characteristics of various materials for its optimum utilization.

L: 0, T: 0, P: 3; Credits: 3

Total Marks: 75 (Int: 25, Ext: 50)

LIST OF EXPERIMENTS

1. Measurements using Multimeter.
2. Measurement of voltage and Frequency using CRO.
3. B-H curve.
4. Determination of Dielectric constant.
5. Energy gap of a semi conductor
6. Study of magnetic field along the axis of a circular coil.
7. Study of Hall Voltage
8. Determination of carrier concentration and carrier mobility of a semiconductor.
9. Numerical Aperture of optical fiber.
10. Bending losses in optical fiber.
11. Air gap losses in optical fiber
12. Characteristics of LASER diode



ENGINEERING WORKSHOP

Objectives: At the end of the course the student is expected to

1. Know the various trades applicable to industries.
2. Hands on experience for common trades.

L: 0, T: 0, P: 3; Credits: 2

Total Marks: 75 (Int: 25, Ext: 50)

TRADES FOR PRACTICE:

1. Carpentry
2. Fitting
3. Tin – Smithy and Development of jobs carried out and soldering.
4. House – Wiring

DEMONSTRATION

5. Black Smithy-
6. Foundry
7. Welding
8. Plumbing
9. Power tools

Text Books:

1. Work Shop Manual : P.Kannaiah, K.I.Narayana, Scitech Publishers.
2. Work Shop Manual: Venkat Reddy.



MATHEMATICS - II

Objectives: Mathematics is the backbone of all Engineering disciplines. Mathematics – II is common to All Branches except BT. At the end of the course, the students will be able to

- (i) Understand and apply the methods of solving the differential equations directly or using Laplace transforms,
- (ii) Solve linear and some nonlinear partial differential equations,
- (iii) Understand the basic of Fourier series and its representation.

L: 4, T: 1, Credits: 4

Total Marks: 100 (Int: 25, Ext: 75)

UNIT- I

First order ordinary differential equations: Formation of ODE. Solution of separable, homogeneous, exact, linear and Bernoulli linear equations

Applications to Newton's law of cooling, Law of natural growth and decay, orthogonal trajectories and geometrical applications.

UNIT- II

Second and higher order ODE with constant coefficients: Solution of second and higher order linear homogeneous differential equations. Non- homogeneous differential equations with RHS term of the type $f(x) = e^{ax}$, $\sin ax$, $\cos ax$, x^n , $e^{ax}V(x)$, $x^nV(x)$. Method of variation of parameters-Applications to bending of beams, electrical circuits, simple harmonic motion.

Unit -III

Laplace transform and its application to ordinary differential equations: Laplace transform of standard functions - inverse Laplace transform - First shifting theorem, Transform of derivatives and integrals - Unit step function - Second shifting theorem



- Differentiation and integration of transforms - Dirac's delta function.

Convolution theorem - Periodic function - Application of Laplace transforms to ordinary differential equations

UNIT- IV

Fourier series: Fourier series on the interval $(-\pi, \pi)$: Determination of coefficients, Fourier series of even and odd functions, convergence. Fourier series on an arbitrary interval. Half range Fourier cosine and sine series using even and odd extensions.

UNIT -V

Partial differential equations: Formation of partial differential equations by eliminating arbitrary constants or arbitrary functions. Solutions of first order linear (Lagrange) equation. Solution of nonlinear first order equations (four standard types). Solution using separation of variables. Application to heat equation (one dimension), wave equation (one dimension) and Laplace equation (two dimensions).

Text Books:

1. Advanced Engineering Mathematics: R.K. Jain and S.R.K. Iyengar. Narosa Publishing House.
2. Advanced Engineering Mathematics: Erwin Kreyszig, Wiley.
3. Higher Engineering Mathematics: B.S. Grewal, Khanna Publications.

Reference Books:

1. Schaum's outline series on Vector Analysis; Laplace Transforms; Differential Equations.



MATHEMATICS – III

Objectives: Mathematics is the backbone of all Engineering disciplines. Mathematics – III is common to All Branches except BT. The course is Numerical solution of problems in various fields. At the end of the course, the students will be able to solve numerically various problems in (i) nonlinear algebraic equations, (ii) systems of linear algebraic equations, (iii) integration, and (iv) initial and boundary value problems in *ODE*.

L: 4, T: 1, Credits: 4

Total Marks: 100 (Int: 25, Ext: 75)

UNIT- I

Solution of a non-linear equation & Solution of linear systems: Solution of non-linear equations: Bisection method, Method of false position, Iteration method and Newton-Raphson method.

Solution of linear systems: Gauss elimination, Gauss elimination with partial pivoting, Gauss-Jordan method, Jacobi and Gauss-Seidel iterative methods. Convergence of iterative methods (without proof).

UNIT- II

Interpolation – 1 (Interpolation for uniform data): Finite differences – Forward, backward and central differences. Relationship between operators. Differences of a polynomial. Newton's forward and backward difference formulas.

UNIT -III

Interpolation – 2 (Interpolation for non-uniform data & Splines): Lagrange and Newton's divided difference formulas for unevenly spaced data.

Splines: Cubic splines and B-splines.



UNIT- IV

Curve fitting (Method of least squares), Numerical differentiation and numerical integration: Curve fitting: Fitting a first degree (linear) and second degree (parabola), exponential, power curves for a data by the Method of least squares.

Numerical differentiation using the Newton's forward and backward difference formulas.

Numerical integration: Trapezoidal and Simpson's $1/3^{\text{rd}}$ rules. Gauss-Legendre one point, two point and three point rules for integration.

UNIT -V

Numerical solution of Initial Value Problems and Boundary Value problems in ODE: Numerical solution of Initial Value Problems: Picard's method of successive approximation. Solution by Taylor series method, Euler method, Runge-Kutta methods of second and fourth orders. Predictor-corrector methods – Combinations of first and second order *P-C* methods.

Numerical solution of Boundary Value Problems in ODE: Finite difference methods for solving second order linear ODE.

Text Books:

1. Advanced Engineering Mathematics: R.K. Jain and S.R.K. Iyengar. Narosa Publishing House.
2. Advanced Engineering Mathematics: Erwin Kreyszig, Wiley.
3. Higher Engineering Mathematics: B.S. Grewal, Khanna Publications.
4. Mathematical Methods: S.R.K. Iyengar and R.K. Jain, Narosa Publishing House.

Reference Books:

1. Numerical Methods for Scientific & Engineering Computation: M.K. Jain, S.R.K. Iyengar, and R.K. Jain. New Age International Publications.
2. Introductory Methods of Numerical Analysis. S.S. Sastry, Prentice Hall.



**ENGINEERING CHEMISTRY**

Objectives: At end of the course, the student should be able to understand the

1. Role of polymers and nano materials in engineering applications.
2. Role of chemistry (conducting polymers) in the energy production.
3. Material behavior for application in environmental applications.
4. Basic concepts of application of materials in all fields of engineering.

L : 3, T : 1, P : 0, Credits : 3

Total Marks : 100
(Int : 25 , Ext : 75)

UNIT- I

Electrochemistry: Concept of Conductance- Specific, Equivalent and molar conductance and ionic conductance, electrolytic cells - Galvanic Cells, Potentiometric titrations - strong acid vs strong base, electrochemical series Concentration Cells

Corrosion - causes and effects of corrosion , theories of corrosion – Chemical, Electrochemical corrosion, factors affecting Corrosion control methods – Cathodic protection, sacrificial anode, impressed current cathode. Surface coatings – methods of application on metals- hot dipping, galvanizing, tinning, cladding, electroplating, Paints – constituents and their functions.

UNIT- II

Water Technology: Introduction, Hardness: Causes, expression of hardness – units – types of hardness, estimation of temporary & permanent hardness of water complexometric method , Boiler troubles – Scale & sludge formation, caustic embrittlement, priming & foaming, Softening of water - Internal and external treatment , Ion exchange process and Numerical problems, Desalination of brackish water - Reverse osmosis, electro dialysis.



UNIT -III

Polymer Technology: Types of Polymerization, Plastics: Thermoplastic resins & Thermo set resins. Compounding & fabrication of plastics, preparation, properties, engineering applications of polyethylene, PVC, poly styrene, Teflon, Bakelite, Nylon. Conducting Polymers: Poly acetylene, polyaniline, applications. Liquid Crystal polymers: Characteristics and uses, Rubber – Natural rubber, vulcanization. Elastomers – Butyl rubber, Thiokol rubbers, Fiber reinforced plastics (FRP), Biodegradable polymers.

UNIT- IV

Energy sources: Concept and classification of fuels - solid, liquid, gaseous , Solid fuels – coal – analysis – proximate and ultimate analysis and their significance, Liquid fuels – petroleum, refining of petroleum – definition of cracking and its significance, knocking - octane number, cetane number, synthetic petrol – Bergius and Fischer Tropseh’s process method, Gaseous fuels – natural gas, LPG, CNG, Calorific value of fuel – HCV, LCV, Introduction to biodiesel, problems.

UNIT-V

Engineering Materials

Cement: Composition and manufacture of port land Cement, setting & hardening of cement .

Lubricants: Definition and classification , theories of lubricants, properties - Cloud point, pour point, flash and fire point, Viscosity.

Refractories: Classification, Characteristics of a good refractory and failure mechanism of refractory materials.

Batteries: Definition and classification, Primary - dry cell, Secondary cells - lead-Acid cell, Ni-Cd cell, and Lithium cells , Fuel cells – Hydrogen – Oxygen fuel cells and uses. Nanomaterials – Introduction, general methods of preparation, applications.

Text Books:

1. Text book of Engineering Chemistry: Y. Bhatthi kumara and C. Jyosna , VGS Book links, Vizayawada, A.P, Edition June 2009.



2. Text Book of Engineering Chemistry: C.P. Murthy, C.V. Agarwal, and A. Naidu, B.S. Publications,Hyd.
3. Text book of Engineering Chemistry by P.C Jain and Monika Jain, Dhanpat Rai Publishing company (p) Ltd , K.K. Group , New Delhi(2006)

Reference Books

1. Chemistry of Engineering Materials: R.P Mani and K.N.Mishra, CENGAGE learning.
2. Text of Engineering Chemistry: S.S. Dara & Mukkati S. Chand & Co,New Delhi(2006)



ENVIRONMENTAL SCIENCE

L: 3, T: 1, Credits: 3

Total Marks: 100 (Int: 25, Ext: 75)

UNIT- I

Introduction to Environment, Ecology and Ecosystems: Definition, Importance and Scope of Environmental Studies, Public Awareness and Participation. Ecology, Concept of Ecosystem, Classification of Ecosystem, Structure, Components and Function of Ecosystem. Typical Ecosystem, Food Chain, Food Web. Biodiversity-Types and values.

UNIT -II

Natural Resources: Definition, Occurrence, Classification of resources, Important natural resources for human society, Utilization-positive and negative effects of water resources, Mineral resources, Forest resources, Energy resources, Land resources. Role of individuals in conservation of important natural resources.

UNIT- III

Environmental Pollution: Definition, Classification of Pollution, Type of Pollution and Pollutants. Causes, effects and control of – Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution and Nuclear Pollution.

UNIT -IV

Environmental Problems and Management Policies: Natural Disasters-Types, causes and effects; Global warming, Climate change-El Nino-La Nina, Ozone layer-location, role and degradation; deforestation and desertification.

Management: Technological solutions, Preventive methods, control techniques;



Green Belt development, Rainwater harvesting, Renewable and alternate resources.

UNIT-V

National Policy on Environment protection and Sustainability: Air (Pollution and prevention) act 1981; Water (Pollution and prevention) Act 1974; Pollution Act 1977; Forest Conservation Act; Wildlife Protection Act; Municipal solid waste management and handling Act; Biomedical waste management and handling Act; Hazardous waste management and handling rules. Role of IT in environment, environmental ethics, environmental economics.

Sustainable development: Cause and Threats to sustainability; strategies for achieving sustainable development; Concept of Green building and Clean Development Mechanism (CDM).

Text Books

1. Text Book of Environmental Studies, Erach BARucha. University Press
2. Text book of Environmental Science and Technology by M.Anji Reddy 2007

Reference Books

1. Biotechnology & Environmental Chemistry. Surinder Jeswal & Anupama Deswal, Dhanpat Rai & Co Pvt. Ltd.
2. A Text Book of Environmental Science. Aravind Kumar. APH Publishing Corporation.
3. Glimpses of Environment. Dr. KVSG. Murali Krishna. Environmental Protection Society.



ENGINEERING GRAPHICS

Objectives: At the end of the course the student is expected to

1. Learn the fundamental concepts of Engineering Graphics.
2. Drafting Practice for Geometrical Drawing and Projections.
3. Introduction to Auto CAD.

L: 3, T: 0, P: 4: Credits: 3

Total Marks: 100 (Int: 25, Ext: 75)

UNIT-I

Introduction to Engineering Drawing: Principles of Engineering Graphics and their significance - Drawing Instruments and their Use - Conventions in Drawing - Lettering - BIS Conventions. Curves used in Engineering Practice & their Constructions:

(a) Conic Sections, (b) Cycloid, Epicycloid and Hypocycloid, (c) Involute, (d) Scales: Different types of scales. Plain Scale, Diagonal Scale & Vernier Scale.

UNIT-II

Drawing of Projections or Views of Orthographic Projection in First Angle Projection only:

Principles of Orthographic Projections - Conventions - First and Third Angle Projections. Projections of Points and Lines inclined to both planes, True lengths, traces. Projections of regular Planes: inclined to both planes.

UNIT- III

Projections of Solids: Projections of Regular Solids inclined to both planes.

Development of Surfaces: Development of Surfaces of Right Regular Solids –



Prisms, Cylinder, Pyramid Cone and their parts.

UNIT – IV

Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts.

Transformation of Projections: Conversion of Isometric Views to Orthographic Views – Conventions.

UNIT – V

Introduction to Computer Aided Drafting

Generation of points, lines, curves, polygons, simple solids and their dimensioning.

Text Books

1. Engineering Drawing, N.D. Bhat, Charotar.
2. Engineering graphics with Auto CAD- R.B. Choudary, Anuradha Publishers.

Reference Books

1. Engineering Drawing and Graphics, Venugopal, New age.
2. Engineering Drawing- Johle, Tata Macgraw Hill.
3. Computer Aided Engineering Drawing- Trymbaka Murthy- I.K. International.
4. Engineering Drawing, Narayana and Kannaiah, Scietech publishers.



IT WORKSHOP

L: 0, T: 0, P: 3

Total Marks: 75 (Int: 25, Ext: 50)

PC Hardware introduces the students to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MS Windows , Linux and the required device drivers. In addition hardware and software level troubleshooting process, tips and tricks would be covered. The students should work on working PC to disassemble and assemble to working condition and install Windows and Linux on the same PC. Students are suggested to work similar tasks in the Laptop scenario wherever possible.

Internet & World Wide **Web** module introduces the different ways of hooking the PC on to the internet from home and workplace and effectively usage of the internet. Usage of web browsers, email, newsgroups and discussion forums would be covered. In addition, awareness of cyber hygiene, i.e., protecting the personal computer from getting infected with the viruses, worms and other cyber attacks would be introduced. **Productivity tools** module would enable the students in crafting professional word documents, spread sheets and slide presentations.

PC Hardware

Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it



up with a Viva.

Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both windows and Linux. Lab instructors should verify the installation and follow it up with a Viva

Task 5: Hardware Troubleshooting : Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva

Task 6: Software Troubleshooting : Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

Internet & World Wide Web

Task- 7: Orientation & Connectivity Boot Camp : Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

Task- 8: Web Browsers, Surfing the Web : Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.

Task-9: Search Engines & Netiquette : Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

Task-10: Cyber Hygiene : Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to first install an anti virus software, configure their personal firewall and windows update on their computer. Then they need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.

Productivity Tools



Task-11: introducing features of professional word documents like opening, closing, editing, saving, printing, and text formatting.

Task-12: students would be exposed to create word documents with images, tables, formulas, and with additional word processing features.

Task -13: introducing features of professional spread sheets like opening, closing, editing, saving, printing, and text formatting.

Task -14: students would be exposed to compile spread sheets using formulas, different number formats, text formats and conditional formatting.

Task-15: introducing features of professional slide presentations like opening, closing, editing, saving, printing, and text formatting.

Task-16: students would be exposed to create slide presentations with tables, different views of slide presentations, master slides, custom animations.

References:

1. Introduction to Information Technology, IITL Education Solutions Limited, Pearson Education.
2. Introduction to Computers, Peter Norton, 6/e Mc Graw Hill
3. Upgrading and Repairing, PC's 18th e, Scott Muller QUE, Pearson Education.
4. Comdex Information Technology Course tool kit Vikas Gupta, WILEY Dreamtech.
5. IT Essentials PC Hardware and Software Companion Guide, Third Edition by David Anfinson and Ken Quamme- CISCO Press, Pearson Education.
6. PC Hardware and A+Handbook – Kate J. Chase PHI (Microsoft).



ENGINEERING CHEMISTRY LABORATORY

Objectives : At end of the course, the student should be able to understand

1. The characteristics and preparation of rubber.
2. The characteristics and nature of lubricating oils.
3. The hard water analysis process.
4. Basic concepts of analysis and application of materials in all fields of engineering.

L : 0, T : 0, P : 3 Credits : 3

**Total Marks : 75
(Int : 25 , Ext : 50)**

LIST OF EXPERIMENTS

1. **Conductometry:** Conductometric titrations of strong acid verses strong base.
2. **Potentiometry:** Potentiometric titration of strong acid verses strong base.
3. **Lubricants:** Determination of viscosity of a sample oil by Redwood viscometer-I.
4. **Lubricants:** Determination of surface tension of lubricants by stalagmometer.
5. **Organic preparations:** Preparation of Aspirin and Thiokol rubber.
6. **Complexometry:** Estimation of hardness of water by using standard EDTA solution.
7. **Complexometry:** Estimation of copper by using standard EDTA solution.
8. **Permanganometry:** Estimation of ferrous iron by using standard potassium permanganate solution.



9. Permanganometry: Estimation of ferric iron by using standard potassium dichromate solution.

10. Colorimetry: Estimation of ferrous iron in cement by using colorimeter.



ENGLISH LAB

Objectives: To expose the students to a variety of self-instructional, learner-friendly modes of language learning.

- (i) To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required facility to face computer-based competitive exams such GRE, TOEFL, GMAT etc.
- (ii) To enable them better pronunciation through stress on word accent, intonation, and rhythm.
- (iii) To train students to use language effectively to face interviews, group discussions, public speaking.
- (iv) To initiate them into greater use of the computer in resume preparation, report writing, format-making etc.

L: 0, T: 0, P: 3, C:2

Total Marks : 75 (Int : 25 , Ext : 50)

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

- (i) Introduction to the sounds of English –Vowels, Diphthongs & Consonants.
- (ii) Situational Dialogues/Role-play.
- (iii) ‘Just A Minute’ Sessions (JAM).
- (iv) Describing Objects/Situations/People.
- (v) Information Transfer. (vi) Debate.
- (vii) Telephone Skills. (viii) Giving Directions.

Suggested Software:

- (i) Cambridge Advanced Learners’ English Dictionary with CD.
- (ii) The Rosetta Stone English Library.
- (iii) Clarity Pronunciation Power-Part 1.



- (iv) Mastering English in Vocabulary, Grammar, Spelling, and Composition.
- (v) Dorling Kindersley series of Grammar, Punctuation, Composition etc.
- (vi) Language in use , Foundation Books Pvt Ltd with CD.
- (vii) Oxford Advanced Learner's Compass, 7th Edition.
- (viii) Learning to speak English-4 CDs.
- (ix) Vocabulary in Use, Michael McCarthy, Felicity O' Den, Cambridge.
- (x) Murphy's English Grammar, Cambridge with CD.
- (xi) English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge

Books (to be located within the lab in addition to the CDS of the text book which are loaded on the systems):

1. **English Language Communication Skills** – A Reader cum Lab Manual Course content and Practice (with CD) Dr. A. Rama Krishna Rao, Dr.G.Natanam, Prof .S.A Sankaranarayanan.Publishers:Anuradha Publications, Chennai
2. **A Handbook of English for professionals**-Fourth Edition Dr.P.Elijah, BS Publications.
3. **Better English Pronunciation**, JD O' Connor,Cmabridge University Press.
4. **A Foundation English Course for undergraduates** (Practice exercises on skills) Paul Gunashekar Shyamala Kumar Das Sachil Mahadevan, Oxford University Press.
5. **Improve Your Writing**, V.N. Arora & Lakshmi Chandra,Oxford University Press.
6. **Speaking English Effectively**,Krihna Mohan & N.P. Singh, Macmillian Publishers.
7. **English Conversation for Indian Students**, Y.V.Yardi,Orient Longman.
8. **The Written Word**, B Vandana R.Singh, Oxford University Press.
9. **Strengthen Your Writing**,V.R. Narayanaswami,Orient Longman Publishers.
10. **A Handbook of Standard English and Indian Usage**, J.Sethi Prentice Hall.
11. **Essential Telephoning in English**,Tony Garside and Barbara Garside,Cambridge press.
12. **English Conversation Practice Spoken English**, Grant Taylor, Tata McGraw Hill
13. **English Conversation Practice Spoken English**, Jayashree Balan,



Vijay Nicole Imprints Pvt.Ltd

- 14. How to Prepare for Group Discussion and Interview, V.Sasi Kumar P
V Dhamija, Tata McGraw Hill**
- 15. Speaking English Effectively, Hari Mohan Prasad Rajnish Mohan
Krishna Mac Millan Publishers**



MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE

UNIT-I

Mathematical Logic : Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms.

Predicates : Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of contradiction, Automatic Theorem Proving.

UNIT-II

Set Theory : Properties of binary Relations, equivalence, compatibility and partial ordering relations, Hasse diagram. Functions: Inverse Function Composition of functions, recursive Functions, Lattice and its Properties, Pigeon hole principles and its application.

Algebraic structures : Algebraic systems Examples and general properties, Semi groups and monoids, groups, sub groups, homomorphism, Isomorphism.

UNIT-III

Elementary Combinatorics: Basis of counting, Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, the principles of Inclusion – Exclusion.

UNIT-IV

Recurrence Relation : Generating Functions, Function of Sequences, Calculating Coefficient of generating function, Recurrence relations, Solving recurrence



relation by substitution and Generating functions. Characteristics roots solution of non homogeneous Recurrence Relation.

UNIT-V

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

TEXT BOOKS :

1. Discrete and Combinational Mathematics- An Applied Introduction- 5th Edition – Ralph. P.Grimaldi, Pearson Education
2. Discrete Mathematical Structures with applications to computer science Trembly J.P. & Manohar .P, TMH
3. Mathematical Foundations for Computer Science Engineers, Jayant Ganguly, Pearson Education
4. Discrete Mathematics and its Applications, Kenneth H. Rosen, Fifth Edition. TMH.

REFERENCES :

1. Discrete Mathematics with Applications, Thomas Koshy, Elsevier
2. Discrete Mathematical Structures, Bernard Kolman, Roberty C. Busby, Sharn Cutter Ross, Pearson Education/PHI.
3. Discrete Mathematical structures Theory and application- Malik & Sen
4. Discrete Mathematics for Computer science, Garry Haggard and others, Thomson.
5. Discrete Mathematics for Computer Scientists & Mathematicians, J.L. Mott, A. Kandel, T.P. Baker Prentice Hall.
6. Logic and Discrete Mathematics, Grass Man & Trembley, Person Education.



DATA STRUCTURES THROUGH C++

Unit -I

Introducing OOP, C++ Class Overview- Class Definition, Objects, Class Members, Access Control, Class Scope, Constructors and destructors, parameter passing methods, Inline functions, static class members, this pointer, friend functions, dynamic memory allocation and de allocation (new and delete), exception handling.

Unit -II

Function Overloading, Operator Overloading, Generic Programming- Function and class templates, Inheritance basics, base and derived classes, inheritance types, base class access control, runtime polymorphism using virtual functions, abstract classes, streams I/O.

Unit -III

Review of basic data structures - the list ADT, stack ADT, queue ADT, implementation using template classes in C++, Dictionary- Hash table representation, hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing.

Unit -IV

Trees : Binary search trees, definition, ADT, implementation, operations-searching, insertion and deletion, Tree Traversals, Balanced search trees- AVL trees, definition, height of an AVL tree, representation, operations-insertion, deletion and searching, B-Trees-B-Tree of order m, height of a B-Tree, insertion, deletion and searching.



Unit -V

Graphs : Representation of Graphs, Topological Sort, Shortest Path Algorithms-Dijkstra's Algorithms, Depth First Search and Breadth First Search, Minimum spanning trees-Prim's and Kruskal's Algorithms.

TEXT BOOKS:

1. Data Structures and Algorithm Analysis in C++, Mark Allen Weiss, Pearson Education, second edition.
2. Object Oriented Programming with C++, E Balagurusamy, Mcgraw Hill Higher Education, Second edition.

REFERENCES:

1. Object Oriented Programming with C++, Subhash K U, Pearson
2. Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and D.Mount, Seventh Edition Wiley student edition, John Wiley and Sons.
3. Data Structures and Algorithms in C++, Third Edition, Adam Drozdek, Thomson
4. C++, The Complete Reference, 4th Edition, Herbert Schildt, TMH.



PROBABILITY AND STATISTICS

UNIT - I

Probability: Basic concepts in Probability - Sample space, event, mutually exclusive and exhaustive events – The axioms of probability –Conditional probability and independence of events –Addition and Multiplication theorems for two events - Bayes theorem, Boole's inequality.

Random variables: Definition of a random variable, discrete and continuous random variables – Distribution function , probability mass function, probability density function with illustrations - Joint, marginal and conditional distributions with illustrations - Mathematical expectation of a r.v and of a function of a r.v. and its properties –Addition and Multiplication theorems of expectation for two variables- Moment Generating Function and Characteristic function, statements of their properties .

UNIT- II

Distributions: Binomial, Poisson distributions, Mean, variance, moment generating function, fitting of these distributions - Uniform, Normal, Exponential distributions, properties of these distributions, fitting of Normal distribution.

Sampling distribution: Definition of Population and sample, Overview of types of sampling (Random, Purposive, SRS, Stratified and Systematic random samplings) - Sampling distribution, standard error, sampling distribution of mean (known and unknown) and proportions.

UNIT- III

Estimation & Testing of Hypothesis: Point estimation – Interval estimation - Bayesian estimation- Confidence interval for mean, difference of means and for proportions. Concepts of Null hypothesis, Alternative hypothesis, Critical region,



Type I and Type II errors, One tail and two-tail tests, Level of significance

Large Samples Tests: Tests of hypothesis for means (single and difference between means), Tests of hypothesis for proportions (single and difference between proportions), Chi-square test for testing goodness of fit, independence of attributes and single population variance.

UNIT -IV

Correlation & Regression: Product moment correlation coefficient, Spearman's rank correlation coefficient and their properties – Simple linear regression, Lines of Regression, Regression coefficient and their properties, Multiple regression for three variables only.

Small samples: Student's t-test for testing the significance of single mean, difference of means(independent samples and paired samples), significance of observed sample correlation coefficient - F-test for equality of variances and ANOVA(1-way & 2-way), Concept and problem solving .

UNIT -V

Stochastic Process: Introduction to Stochastic Process-Markov process, Classification of states-Examples of Markov chains, stochastic matrix, limiting probabilities.

Queuing theory: Queue description, characteristics of a queuing model, Poisson process, concept of Birth and death process, steady state solutions of (M/M/1: “/ FIFO) and (M/M/1: N/FIFO).

TEXT BOOKS:

1. Probability and statistics for engineers (Erwin Miller and John E. Freund), R.A Johnson and C.B.Gupta.
2. Fundamentals of Stochastic process-B.R.Bhat



3. Probability, Statistics and Queuing Theory, 2nd Edition, Trivedi, John Wiley and Sons
4. Operations Research by Manmohan, Kantiswaroop & Gupta.

REFERENCE BOOKS:

1. Fundamentals of Mathematical Statistics, S.C.Gupta, V.K.Kapoor
2. Probability, Statistics and Queuing Theory with computer applications- Arnold O.Allen
3. Introduction to Probability and Statistics, 12th edition, W.Mendenhall, R.J.Beaver and B.M.Beaver, Thomson. (Indian edition)
4. Probability and Statistics in Engineering, 4th Edition, William W.Hines, Douglas C.Montgomery, David M.Goldman, Connie M.Borror, Wiley Student Edition.
5. Introduction to Probability and Statistics, J.S.Milton, Jesse C.Arnold, 4th edition, TMH.
6. Mathematical Statistics by Biswas & Srivatsava.

Objective: At the end of the course the student is expected to

1. Know the fundamentals of Probability and Statistics
2. Understand and apply the Tests of Hypothesis, Correlation & Regression
3. Understand simple Queuing models.



DIGITAL LOGIC DESIGN

UNIT – I

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

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

UNIT – II

Gate-Level Minimization: The Map method, Four-variable map, Five-Variable map, Product of Sum's simplifications, Don't care conditions, NAND and NOR implementation, other two level implementations, Exclusive-OR Function.

UNIT – III

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

UNIT - IV

Synchronous Sequential Logic: Sequential Circuits, latches, Flip-Flops, Analysis of clocked sequential circuits, State Reduction and Assignment, Design Procedure.

Registers and Counters: Registers, shift registers, Ripple Counters, Synchronous



Counters, other counters.

UNIT – V

Memory and Programmable Logic: Introduction, Random Access Memory, Memory Decoding, Error Detection and correction, Read Only Memory, Programmable logic Array, Programmable Array Logic, Sequential Programmable Devices.

Hardware Description Language: Hardware Description Language, Definition, Structural Definition of HDL, HDL Models for Combinational circuits, HDL for Models for Sequential circuits.

Text Books:

1. Digital Design – Fourth Edition, M. Morris Mano, Pearson Education.
2. Fundamentals of Logic Design – Roth, 5th Edition, Thomson.

References:

1. Switching and Finite Automata Theory by Zvi Kohavi, Tata Mc Graw Hill.
2. switching and Logic Design – CVS Rao, Pearson Education
3. Digital Principles and Design – Donald D.Givone, Tata Mc Graw Hill.
4. Fundamentals of Digital Logic and Micro Computer Design, 5th Edition, M.Rafiqzaman (John Willey)



DATA BASE MANAGEMENT SYSTEMS

UNIT-I

Data base System Applications, data base System VS file System – View of Data – Data Abstraction – Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management –Data base design and ER diagrams –Attributes and Entity sets – Relationships and Relationship sets –Concept Design with the ER Model.

UNIT – II

Relational Model: Introduction to the Relational Model – Integrity Constraint Over relations –Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views.

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

UNIT – III

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



UNIT – IV

Transaction Concept: Transaction State – Implementation of Atomicity and Durability- Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation-Testing for serializability – Lock based Protocols – timestamp based protocols – validation based protocols – Multiple Granularity.

Recovery and Atomicity – Log based recovery – Recovery with concurrent transactions- Buffer Management.

UNIT – V

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

TEXT BOOKS:

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

REFERENCE BOOK:

1. Introduction to Database Systems, C.J.Date Pearson Education
2. Data base Systems design, Implementation, and Mgmt, Rob & Coronel 5thEdn. Thomson
3. Database Management Systems P. Radha Krishna HI-TECH Publications 2005
4. Data base Management System, Elmasri Navrate Pearson Education
5. Data base Management System Mathew Leon, Leo





DATA STRUCTURES THROUGH C++ LAB

Task 1 – Write C++ programs to implement the following

- a) Constructors and destructors
- b) Friend functions

Task 2 – Write C++ programs to implement the following

- a) Function and Operator Overloading
- b) Function and Class Templates
- c) Inheritance

Task 3 – Write C++ programs to implement the following

- a) Polymorphism
- b) Streams I/O

Task 4 – Write C++ programs to implement the following using an array.

- a) Stack ADT
- b) Queue ADT

Task 5 – Write C++ programs to implement the following using a singly linked list.

- a) Stack ADT
- b) Queue ADT

Task 6 – Write a C++ program to implement all the functions of a dictionary (ADT) using Hashing

Task 7 – Write a C++ program to perform the following operations:

- a) Insert an element into a binary search tree.
- b) Delete an element from a binary search tree.
- c) Search for a key element in a binary search tree.

Task 8 – Write C++ programs using Recursive and Non-recursive functions to



traverse the given binary tree in

- a) Preorder
- b) Inorder and
- c) Postorder.

Task 9 – Write C++ programs for the implementation of BFS and DFS for a given graph.

Task 10 – Write a C++ program to perform the following operations

- a) Insertion into an AVL-tree
- b) Deletion from an AVL-tree

Task 11 – Write a C++ program to implement Kruskal’s algorithm to generate a minimum cost spanning tree.

Task 12 – Write a C++ program to implement Prim’s algorithm to generate a minimum cost spanning tree.

TEXT BOOKS :

1. Data Structures and Algorithms in C++, Third Edition, Adam Drozdek, Thomson.
2. Data Structures using C++, D.S. Malik, Thomson

DATA BASE MANAGEMENT SYSTEMS LAB

Objectives:

- To teach the student database design and query and PL/SQL.

Recommended Systems/Software Requirements:

- Intel based desktop PC
 - Mysql /Oracle latest version Recommended
1. Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
 2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.

Example:- Select the roll number and name of the student who secured fourth rank in the class.
 3. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
 4. Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)
 5.
 - i) Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)
 - ii) Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.



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

TEXT BOOKS :

1. ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rd Edition
2. ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc-Graw Hill.
3. SQL & PL/SQL for Oracle 10g, Black Book, Dr.P.S. Deshpande.

DIGITAL ELECTRONICS LAB

A. COMBINATIONAL CIRCUITS

1. Realization of Gates(AND, OR,NOT, NAND, NOR)
Exercise: Realize an XOR and XNOR gates
2. Design of Half adder, Full adder using Gates
Exercise: Design Half subtractor circuit
3. Verification of 4 bit Magnitude comparator
Exercise: Verify an 8 bit Magnitude comparator
4. Design of 2 to 4 decoder
Exercise: Implement a 3 to 8 decoder
5. Design of 2 to 1 Multiplexer
Exercise: Implement a 4 to 1 multiplexer
6. Design of 1 to 4 Demultiplexer
Exercise: Design a 1 to 4 Demultiplexer using 1 to 2 Demultiplexer
7. Implementation of Binary to Grey code converter
Exercise: Implement a bcd to excess-3 code
8. Design a 4 bit Parity Checker
Exercise: Design a 4 bit Parity Generator.

B. SEQUENTIAL CIRCUITS

1. Verification of truth tables of D and T Flip-Flops
Exercise: Verify JK Flip Flop
2. Implementation of Frequency divider(by 8)
Exercise: Design a divide by 4 Frequency divider
3. Conversion of JK Flip Flop to D Flip Flop
Exercise: Convert JK Flip Flop to T flip flop



Exercise: Design a parallel to serial Shift Register

6. Design of Binary counter

Exercise: Design of Decade Counter

7. Design of Asynchronous Up counter

Exercise: Design an Asynchronous mod counter

8. Design of Synchronous Down counter

Exercise: Design a Synchronous UP/Down counter

Note: A minimum of 12 (Twelve) experiments have to be performed and recorded by the candidate to attain eligibility for University Practical Examination.



COMPUTER ORGANIZATION

UNIT -I

Basic Structure of Computers: Computer Types, Functional unit, Basic OPERATIONAL concepts, Bus structures, Multiprocessors and Multi computers., Data Representation, Fixed Point Representation, Floating – Point Representation, Error Detection codes.

Register Transfer Language and Micro operations: Register Transfer language. Register Transfer, Bus and memory transfers, Arithmetic Micro operations, Logic micro operations, Shift micro operations, Arithmetic logic shift unit.

UNIT -II

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

Micro Programmed Control: Control memory, Address sequencing, micro program example, design of control unit, Micro program Sequencer, Hard wired control Vs Micro programmed control,

UNIT -III

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

Computer Arithmetic: Addition and subtraction, multiplication Algorithms, Floating – point Arithmetic operations, BCD Adder.

UNIT -IV



Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer Modes of Transfer, Priority Interrupt, Direct memory Access, Input –Output Processor (IOP).

Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, Dependencies, Vector Processing.

UNIT -V

Memory Organisation: Memory Hierarchy, Main memory- RAM and ROM chips, Memory Address map, Auxiliary memory – Magnetic Disks, Magnetic Tapes, Associative Memory – Hardware Organization, Match Logic, Cache Memory – Associative mapping, Direct mapping, Set associative mapping, Writing into cache and cache initialization, Cache Coherence, Virtual memory – Address Space and Memory Space, Address mapping using pages, Associative Memory page table, Page Replacement.

Multi Processors: Characteristics of Multiprocessors, Interconnection Structures, Cache Coherence, Shared Memory Multiprocessors.

Text books:

1. Computer Systems Architecture – M.Moris Mano, IIIrd Edition, Pearson/PHI
2. Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.

References:

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI
2. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition PHI/Pearson
3. Fundamentals of Computer Organization and Design, - Sivaraama Dandamudi Springer Int. Edition.



4. Computer Architecture a quantitative approach, John L. Hennessy and David A. Patterson, Fourth Edition Elsevier
5. Computer Architecture: Fundamentals and principles of Computer Design, Joseph D. Dumas II, BS Publication.

OPERATING SYSTEMS

UNIT -I

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

UNIT -II

Process Management - Process concepts threads, scheduling-criteria algorithms, their evaluation, Thread scheduling, case studies Linux, Windows

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

UNIT -III

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

Principles of deadlock – system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock.

I/O systems, Hardware, application interface, kernel I/O subsystem, Transforming I/O requests Hardware operation, performance.

UNIT -IV



File system Interface- the concept of a file, Access Methods, Directory structure, file sharing, protection.

File System implementation- File system structure, file system implementation, directory implementation, allocation methods, free-space management, efficiency and performance.

Mass-storage structure overview of Mass-storage structure, Disk structure, disk attachment disk scheduling, swap-space management, RAID structure, stable-storage implementation, Tertiary storage structure.

UNIT -V

Protection : Protection, Goals of Protection, Principles of Protection, Domain of protection Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability- Based systems, Language – Based Protection,

Security- The Security problem, program threats, system and network threats cryptography as a security tool, user authentication, implementing security defenses, firewalling to protect systems and networks, computer - security classifications.

TEXT BOOKS

1. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Operating Systems‘ - Internal and Design Principles Stallings, Fifth Edition–2005, Pearson education/PHI

REFERENCES

1. Operating systems- A Concept based Approach-D.M.Dhamdhare, 2nd Edition, TMH
2. Operating System A Design Approach-Crowley, TMH.
3. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI.



Gokaraju Rangaraju Institute of Engineering and Technology (Autonomous)

Department of Information Technology

Kukatpally, Hyderabad – 500 090, A.P., India (040) 6586 4440

Guidelines:

- Total Marks = 725 per Sem * 8 Sem = 5800
- Total Credits = 25 per Sem * 8 Sem = 200
- Load distribution per Semester = 5 Theory + 3 Labs (except IV Year, 2nd Sem.)
- Electives: 1 Open Elective + 4 Electives
- BAS: Basic Applied Sciences
- DC: Departmental Core
- DE: Departmental Elective
- HSS: Humanities and Social Sciences
- IE: Interdepartmental Elective
- PW: Project Work

II Year I Semester							
#	Group	Name of Course	L	T	P	C	Marks
1	DC	Mathematical Foundations of Computer Science (MFCS)	4	1		4	100
2	DC	Data Structures Through C ++	4	1		4	100
3	BAS	Probability & Statistics (P&S)	4	1		4	100
4	IE	Digital Logic Design (DLD)	3	1		3	100
5	DC	Database Management Systems	4	1		4	100
#	Group	Labs					
1	DC	Data Structures Through C ++ Lab			3	2	75
2	DC	Database Management Systems Lab			3	2	75
3	IE	Digital Electronics Lab Lab			3	2	75
		Total	19	5	9	25	725



II Year II Semester							
#	Group	Name of Course	L	T	P	C	Marks
1	DC	Computer Organization	4	1		4	100
2	DC	Operating System(OS)	4	1		4	100
3	DC	Object Oriented Programming through java	4	1		4	100
4	DC	Software Engineering3	1		3	100	
5	DC	Design Analysis of Algorithms	4	1		4	100
#	Group	Name of Lab					
1	DC	Operating System Lab		3	2	75	
2	DC	Object Oriented Programming through Java Lab		3	2	75	
3	DC	Web Designing Lab		3	2	75	
		Total	19	5	9	25	725

III Year I Semester							
#	Group	Name of Course	L	T	P	C	Marks
1	DC	Compiler Design	4	1		4	100
2	DC	Computer Graphics	4	1		4	100
3	DC	Advanced UNIX Programming	4	1		4	100
4	IE	Micro Controllers	3	1		3	100
5	HSS	Managerial Economics and Financial Analysis	4	1		4	100
#	Group	Name of Lab					
1	DC	Advanced English communication Skills Lab			3	2	75
2	DC	Advanced UNIX Programming Lab		3	2	75	
3	IE	Micro Controller Lab		3	2	75	
		Total	19	5	9	25	725



III Year II Semester							
#	Group	Name of Course	L	T	P	C	Marks
1	DC	Web Technologies	3	1		3	100
2	DC	Computer Networks 4	1		4	100	
3	HSS	Management Science 4	1		4	100	
4	DC	Data Mining and Data warehousing	4	1		4	100
5	IE	Open Elective Cryptography & Network Security Embedded Systems Distributed Databases Wireless Communication	4	1		4	100
#	Group	Name of Lab					
1	DC	Computer Networks and Data warehousing and Data Mining Lab		3	2	75	
2	DC	Web Technologies Lab		3	2	75	
3	PW	Industry Oriented					
		Mini Project			3	2	75
Total			19	5	9	25	725



IV Year I Semester							
#	Group	Name of Course	L	T	P	C	Marks
1	DC	Software Testing Methodologies	4	1		4	100
2	DC	Mobile Computing	4	1		4	100
3	DC	Object Oriented Analysis and Design	4	1		4	100
4	DE	Elective-1 Digital Image Processing Artificial Intelligence & Neural Networks Multimedia Applications and Development Semantic Web & Social Networks	4	1		4	100
5	DE	Elective-2 Information Retrieval System Scripting Languages Network Programming Multimedia And Rich Internet Development	3	1		3	100
#	Group	Name of Lab					
1	DC	Scripting Languages Lab			3	2	75
2	DC	Object Oriented Analysis and Design Lab			3	2	75
3	DC	Software Testing Methodologies Lab			3	2	75
Total			19	5	9	25	725



IV Year II Semester							
#	Group	Name of Course	L	T	P	C	Marks
1	DC	Mobile Application Development	3	1		3	100
2	DE	Elective-3 Software Project Management E-Commerce Web Services VLSI Design	3	1		3	100
3	DE	Elective-4 Human computer Interaction Middleware Technologies Design Patterns cloud computing	3	1		3	100
#	Group	Name of Lab					
1	DC	Mobile Application Development Lab	-	-	3	2	75
2	DC	Comprehensive Viva	-	-	3	2	100
3	DC	Seminar	15	-	-	10	50
4	PW	Project Work	-	-	3	2	200
Total			24	3	9	25	725



COMPILER DESIGN

UNIT – I

Overview of Compilation: Phases of Compilation – Lexical Analysis, Regular Grammar and regular expression for common programming language features, pass and Phases of translation, interpretation, bootstrapping, data structures in compilation – LEX lexical analyzer generator.

UNIT – II

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

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

UNIT – III :

Semantic analysis : Intermediate forms of source Programs – abstract syntax tree, polish notation and three address codes. Attributed grammars, Syntax directed translation, Conversion of popular Programming languages language Constructs into Intermediate code forms, Type checker.

Symbol Tables : Symbol table format, organization for block structures languages, hashing, tree structures representation of scope information .

UNIT – IV :

. Block structures and non block structure storage allocation: static, Runtime stack and heap storage allocation, storage allocation for arrays, strings and records. Code optimization : Consideration for Optimization, Scope of Optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation.

UNIT – V:

Data flow analysis : Flow graph, data flow equation, global optimization, redundant sub expression elimination, Induction variable elements, Live variable analysis, Copy propagation.

Object code generation : Object code forms, machine dependent code optimization, register allocation and assignment generic code generation algorithms, DAG for register allocation.



TEXT BOOKS :

1. Principles of compiler design -A.V. Aho . J.D.Ullman; Pearson Education.
2. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

REFERENCES :

1. lex &yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly
2. Modern Compiler Design- Dick Grune, Henry E. Bal, Cariel T. H. Jacobs, Wiley dreamtech.
3. Engineering a Compiler-Cooper & Linda, Elsevier.
4. Compiler Construction, Loudon, Thomson.



COMPUTER GRAPHICS

UNIT I:

Introduction, Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices.

Output primitives : Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms

UNIT II:

2-D geometrical transforms : Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.

2-D viewing : The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm (p.nos 237-249, 257-261 of text book -1, p.nos. 111-126 of text book-2).

UNIT III:

3-D Geometric transformations : Translation, rotation, scaling, reflection and shear transformations, composite transformations.

3-D viewing : Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping (p.nos 427-443, 452-481 of text book -1).

UNIT IV:

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

UNIT V:

Computer animation : Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications. (p.nos 604-616 of text book -1, chapter 21 of text book-2).



TEXT BOOKS :

1. “Computer Graphics C version”, Donald Hearn and M.Pauline Baker, Pearson Education.
2. “Computer Graphics Principles & practice”, second edition in C, Foley, VanDam, Feiner and Hughes, Pearson Education.

REFERENCES :

1. “Computer Graphics”, second Edition, Donald Hearn and M.Pauline Baker, PHI/Pearson Education.
2. “Computer Graphics Second edition”, Zhigand xiang, Roy Plastock, Schaum’s outlines, Tata Mc- Graw hill edition.
3. Procedural elements for Computer Graphics, David F Rogers, Tata Mc Graw hill, 2nd edition.
4. “Principles of Interactive Computer Graphics”, Neuman and Sproul, TMH.5. Principles of Computer Graphics, Shalini Govil, Pai, 2005, Springer.
6. Computer Graphics, Steven Harrington, TMH

**ADVANCED UNIX PROGRAMMING LAB****UNIT-I**

Unix Utilities-Introduction to Unix file system, vi editor, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, cp, mv, rm, unlink, mkdir, rmdir, du, df, mount, umount, find, unmask, ulimit, ps, who, w, finger, ftp, telnet, text processing utilities and backup utilities, detailed commands to be covered are cat, tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, comm, cmp, diff, tr, tar. **Working with the Bourne shell:** what is a shell, shell responsibilities, pipes and input Redirection, output redirection, here documents, shell meta characters, shell variables, shell commands, the environment, control structures, shell script examples.

UNIT-II

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

UNIT-III

Unix Process and Signals: What is process, process structure, starting new process, waiting for a process, zombie process, process control, process identifiers, system call interface for process management-fork, vfork, exit, wait, waitpid, exec, system, Signals- Signal functions, unreliable signals, interrupted system calls, kill and raise functions, alarm, pause functions, abort, sleep functions.

UNIT-IV

Interprocess Communication Overview: Introduction to IPC, IPC between processes on a single computer system, IPC between processes on different systems, file and record locking, other unix locking techniques, pipes, FIFOs, streams and messages, namespaces, introduction to three types of IPC(system-V)-message queues, semaphores and shared memory.

UNIT-V

Message Queues-Unix system-V messages, unix kernel support for messages, unix APIs for messages, client/server example. Semaphores-Unix system-V semaphores,



unix kernel support for semaphores, unix APIs for semaphores, file locking with semaphores. Shared Memory-Unix system-V shared memory, unix kernel support for shared memory, unix APIs for shared memory, semaphore and shared memory example.

Text Books:

1. Unix the ultimate guide, Sumitabha Das, TMH
2. Unix Network Programming, W.R.Stevens, Pearson/PHI

References:

1. Advanced Programming in the Unix environment, W.R.Stevens, Pearson education.
2. Unix system programming using C++, T.Chan, PHI
3. Unix for programmers and users, third edition, Graham Glass, King Ables, Pearson education.



MICROCONTROLLERS LAB

List of experiments on 2G kit

1.LED patterns

- a) Blinking LEDs, b)Serial lights, c)Half on/Half off, d)Alternate on/off

2.Switches & LEDs

- a) Press switch to make corresponding LED on, b)Press switch to make corresponding LED off c)First switch press, last LED on, d) First switch press, last LED off

3. LCD

- a) Character &string display on LCD, b)SW1-Display string1 on first line of LCD,
- c) SW2-Display string1 on first line of LCD, SW2

3. UART

- a) Echo Program,
- b) Take command from PC & glow corresponding LED,
- c) Press Switch & display switch number on PC, d) Display data received by UART on LCD

4. TRIAC

- a) 220V AC bulb switch on/off, b) 220V AC fan speed control with fixed step size

5.ADC

- a) Raw ADC value display on LCE,
- b) Raw ADC value display on Hyper Terminal
- c) Engineering unit conversion and display on LCD, d)Engineering unit conversion and display on Hyper Terminal
- e) Limit checking for temperature value and switching on fan using triac
- f) Limit checking for ambient light value and switching on light using triac.



6.DAC

- a) Fixed step incremented DAC, output seen on multi-meter,
- b) DAC input value received from Hyper Terminal
- c) DAC input value taken from switches

7. DC motor

- a) DC motor control-CW,CCW and stop using switches,
- b) DC motor control-CW,CCW and stop using commands received from Hyper Terminal

8.ZigBee

- a) Receive data on ZigBee from PC ZigBee dongle and display data on LEDs
- b) Receive data on ZigBee from PC ZigBee dongle and display data on LCD
- c) Read ADC and transmit data using ZigBee
- d) Triac based control of fan and light using data received on ZigBee

9.RF 433MHz

- a) Receive data on RF from another kit with RF transmitter. Connect PCs to both kits. Type in data in Hyper Terminal of Transmitter kit & see on Hyper Terminal of Receiver kit
- b) Read switches on transmitter kit, send their status on RF to receiver kit and control motor using switch status

10.Bluetooth

- a) Transfer data to PC using BlueLink,
- b) Receive data from PC using BlueLink & display on LCD
- c) Transfer data from mobile phone(using a J2ME app) and receive using Blue link and control motor operation
- d) Transfer data from mobile phone(using a J2ME app) and receive using BlueLink and control electrical appliance operation

11.Ethernet

- a) Transfer data to PC using WIZI05SR and display on Hyper Terminal,
- b) Implement an embedded web server

12.RTC

- a) Read and display RTC data on LCD,
- b) Read and display RTC data on Hyper Terminal



- c) Set RTC using Hyper terminal and display data on Hyper Terminal,
- d) Implement an Event Logger with Time Stamp display

13.SDcard

- a) Transfer data to PC, store on SDcard and retrieve it back(block transfer)
- b) Implement FAT file system on SDcard
- c) Implement data acquisition system and store data in a CSV file on SD card with time stamp

Note: A minimum of 12 (Twelve) experiments have to be performed and recorded by the candidate to attain eligibility for University Practical Examination.



WEB TECHNOLOGIES

Objectives:

This course demonstrate an in-depth understanding of the tools and Web technologies necessary for business application design and development. The course covers client side scripting like HTML, JavaScript and server side scripting like servlets, JSPs. And also XML and web servers and database interfacing.

UNIT-I:

HTML Common tags- List, Tables, images, forms, Frames; Cascading Style sheets; Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

UNIT-II:

XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK

Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's

UNIT-III:

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

UNIT-IV:

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

JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling



and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations

UNIT V:

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

TEXT BOOKS:

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech (UNIT s 1,2,3)
2. The complete Reference Java 2 Fifth Edition by Patrick Naughton and Herbert Schildt. TMH (Chapters: 25) (UNIT 4)
3. Java Server Pages –Hans Bergsten, SPD O’Reilly (UNITs 5,6,7,8)

REFERENCE BOOKS:

1. Programming world wide web-Sebesta, Pearson
2. Core SERVLETS AND JAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson
3. Internet and World Wide Web – How to program by Dietel and Nieto PHI/ Pearson Education Asia.
4. Jakarta Struts Cookbook , Bill Siggelkow, S P D O’Reilly for chap 8.
5. Murach’s beginning JAVA JDK 5, Murach, SPD
6. An Introduction to web Design and Programming –Wang-Thomson
7. Web Applications Technologies Concepts-Knuckles, John Wiley
8. Programming world wide web-Sebesta, Pearson
9. Web Warrior Guide to Web Programmng-Bai/Ekedaw-Thomas
10. Beginning Web Programming-Jon Duckett WROX.
11. Java Server Pages, Pekowsky, Pearson.



COMPUTER NETWORKS

UNIT – I

Introduction : OSI, TCP/IP and other networks models, Examples of Networks: Novell Networks, Arpanet, Internet, Network Topologies WAN, LAN, MAN.

Physical Layer : Transmission media copper, twisted pair wireless, switching and encoding asynchronous communications; Narrow band, broad band ISDN and ATM.

UNIT - II

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

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

UNIT - III

Network Layer : Virtual circuit and Datagram subnets-Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broad cast, Multi cast, distance vector routing.

Dynamic routing – Broadcast routing, Rotary for mobility, Congestion, Control Algorithms – General Principles – of Congestion prevention policies.

Internet working: The Network layer in the internet and in the ATM Networks.

UNIT –IV

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

UNIT –V

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

TEXT BOOKS :

1. Computer Networks — Andrew S Tanenbaum, 4th Edition, Pearson Education/ PHI



2. Data Communications and Networking – Behrouz A. Forouzan, Third Edition
TMH.

REFERENCES :

1. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition,
Pearson Education
2. Understanding communications and Networks- 3rd Edition, W.A. Shay,
Thomson

**MANAGEMENT SCIENCE****UNIT-I**

Introduction to Management & Organisation: Concepts of Management and organization- nature, importance and Functions and Theories of Management, Systems Approach to Management, Leadership Styles, Social responsibilities of Management. Designing Organisational Structures: Basic concepts related to Organisation - Departmentation and Decentralisation, Types and Evaluation of mechanistic and organic structures of organisation and suitability.

UNIT-II

Operations & Marketing Management: Principles and Types of Plant Layout- Methods of production (Job, batch and Mass Production), Work Study -Basic procedure involved in Method Study and Work Measurement-Statistical Quality Control: control charts for Variables and Attributes, (simple Problems) and Acceptance Sampling, Deming's contribution to quality. Objectives of Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Stores Records - Functions of Marketing, Marketing Mix, Marketing Strategies based on Product Life Cycle, Channels of distribution.

UNIT-III

Human Resources Management (HRM): Concepts of HRM, HRD and Personnel Management and Industrial Relations (PMIR), HRM vs PMIR, Basic functions of HR Manager: Manpower planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Grievance Handling and Welfare Administration, Job Evaluation and Merit Rating.

UNIT-IV

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

UNIT-V

Strategic Management and Contemporary Strategic Issues: Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process,



Environmental Scanning, Value Chain Analysis, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives. Contemporary Management Practices: Basic concepts of MIS, End User Computing, Materials Requirement Planning (MRP), Just-In-Time (JIT) System, Total Quality Management (TQM), Six sigma and Capability Maturity Model (CMM) Levels, Supply Chain Management, Enterprise Resource Planning (ERP), Performance Management, Business Process outsourcing (BPO), Business Process Re-engineering and Bench Marking, Balanced Score Card.

TEXT BOOKS:

1. Aryasri: *Management Science*, TMH, 2009.
2. Stoner, Freeman, Gilbert, *Management*, Pearson Education, 2009.

REFERENCE BOOKS:

1. Kotler Philip & Keller Kevin Lane: *Marketing Management*, PHI, 2009
2. Koontz & Weihrich: *Essentials of Management*, TMH, 2009.



DATA MINING AND DATA WAREHOUSING

UNIT I

Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or a Data Warehouse System, Major issues in Data Mining. **Data Preprocessing:** Need for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

UNIT II

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

UNIT III

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

UNIT IV

Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by Backpropagation, Support Vector Machines, Associative Classification, Prediction, Accuracy and Error measures, Evaluating the accuracy of a Classifier or a Predictor

Cluster Analysis Introduction :Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Outlier Analysis - Distance-Based Outlier Detection, Density-Based Local Outlier Detection

UNIT V

Mining Streams, Time Series and Sequence Data: Mining Data Streams, Mining Time-Series Data, Mining Sequence Patterns in Transactional Databases



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

TEXT BOOKS:

1. Data Mining – Concepts and Techniques - Jiawei Han & Micheline Kamber, Morgan Kaufmann Publishers, Elsevier, Second Edition, 2006.
2. Introduction to Data Mining – Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Pearson education.

REFERENCES:

1. Data Mining Techniques – Arun K. Pujari, Second Edition, Universities Press.
2. Data Warehousing in the Real World, Sam Aanhory and Dennis Murray, Pearson Edn Asia.



CRYPTOGRAPHY AND NETWORK SECURITY

Unit-I

Introduction to security attacks, services and mechanism, introduction to cryptography.

Conventional Encryption: Conventional encryption model, classical encryption techniques- substitution ciphers and transposition ciphers, cryptanalysis, stereography, stream and block ciphers.

Modern Block Ciphers: Block ciphers principals, Shannon's theory of confusion and diffusion, fiestal structure, data encryption standard(DES), strength of DES, differential and linear crypt analysis of DES, block cipher modes of operations, triple DES, IDEA encryption and decryption, strength of IDEA, confidentiality using conventional encryption, traffic confidentiality, key distribution, random number generation.

Unit-II

Principals of public key crypto systems, RSA algorithm, security of RSA, key management, Diffle-Hellman key exchange algorithm, introductory idea of Elliptic curve cryptography, Elgamel encryption.

Unit-III

Message Authentication and Hash Function: Authentication requirements, authentication functions, message authentication code, hash functions, birthday attacks, security of hash functions and MACS, MD5 message digest algorithm, Secure hash algorithm(SHA).

Digital Signatures: Digital Signatures, authentication protocols, digital signature standards (DSS), proof of digital signature algorithm.

Unit-IV

Authentication Applications: Kerberos and X.509, directory authentication service, electronic mail security-pretty good privacy (PGP), S/MIME.

Unit-V

IP Security: Architecture, Authentication header, Encapsulating security payloads, combining security associations, key management.



Web Security: Secure socket layer and transport layer security, secure electronic transaction (SET).

System Security: Intruders, Viruses and related threats, firewall design principals, trusted systems.

TextBooks:

1. William Stallings, “Cryptography and Network Security: Principals and Practice”, Prentice Hall, New Jersey.
2. Johannes A. Buchmann, “Introduction to Cryptography”, Springer-Verlag.
3. Bruce Schneier, “Applied Cryptography”.

EMBEDDED SYSTEMS**UNIT-I**

Introduction to Embedded Processors: Introduction to Embedded Computing, Issues and Challenges in Embedded system Design, Trends: SC, custom designed chips, configurable designed chips, configurable processors and multi-core processors.

Embedded processor architecture: General concepts, instruction sets, Levels in architecture, Functional description-hardware/software trade-off Introduction to RISC architecture, Pipelining, Instruction issue and execution, Instruction formats, Addressing modes, Data alignment and byte ordering.

UNIT-II

Devices and Buses for Devices Network: I/O Devices:- Types and Examples of I/O devices, Synchronous, Iso-synchronous and Asynchronous Communications from Serial Devices - Examples of Internal Serial-Communication Devices:- SPI, UART, Parallel Port

Devices - Timer and Counting Devices – Serial Communication using: 'I2C', 'USB', 'CAN' - Advanced I/O Serial high speed buses: ISA, PCI, PCI-X, cPCI and advanced buses.

UNIT-III

Programming Concepts and Embedded Programming in C, C++ : Programming in assembly language (ALP) vs High Level Language - C Program Elements:- Macros and functions, Use of Data Types, Structure, Pointers, Function Calls - Concepts of Embedded Programming in C++:- Objected Oriented Programming, Embedded Programming in C++, 'C' Program compilers – Cross compiler-Optimization of memory needs.

UNIT-IV

Real Time Operating Systems: Definitions of process, tasks and threads – Inter Process Communication:- Shared data problem, Use of Semaphore(s), Priority Inversion Problem and Deadlock Situations, Message Queues, Mailboxes, Pipes, Virtual (Logical) Sockets,

Remote Procedure Calls (RPCs) - Operating System Services:- Goals, Structures, Kernel, Process Management, Memory Management, Device Management - Real



Time Operating System - RTOS Task scheduling models:- Co-operative Round Robin Scheduling, Cyclic Scheduling with Time Slicing.

UNIT-V

System Design Techniques: Design Methodologies, Requirement Analysis, Specification, System Analysis and Architecture Design. Design Examples:- Telephone PBX- System Architecture, Ink jet printer - Hardware Design and Software Design, Personal Digital Assistants, Set-top Boxes.

TEXT BOOKS:

1. Rajkamal, Embedded Systems Architecture, Programming and Design, TATA McGraw-Hill, First reprint Oct. 2003.

REFERENCES:

1. Steve Heath, Embedded Systems Design, Second Edition-2003, Newnes,
2. David E.Simon, An Embedded Software Primer, Pearson Education Asia, First Indian Reprint 2000.
3. Frank Vahid and Tony Givargis, Embedded Systems Design – A unified Hardware/Software Introduction, John Wiley, 2002.



DISTRIBUTED DATABASES

UNIT - I

Features of Distributed versus Centralized Databases, Principles Of Distributed Databases , Levels Of Distribution Transparency, Reference Architecture for Distributed Databases , Types of Data Fragmentation, Integrity Constraints in Distributed Databases. Translation of Global Queries to Fragment Queries, Equivalence Transformations for Queries, Transforming Global Queries into Fragment Queries, Distributed Grouping and Aggregate Function Evaluation, Parametric Queries.

UNIT – II

Optimization of Access Strategies, A Framework for Query Optimization, Join Queries, General Queries. The Management of Distributed Transactions, A Framework for Transaction Management , Supporting Atomicity of Distributed Transactions, Concurrency Control for Distributed Transactions, Architectural Aspects of Distributed Transactions.

UNIT - III

Concurrency Control, Foundation of Distributed Concurrency Control, Distributed Deadlocks, Concurrency Control based on Timestamps, Optimistic Methods for Distributed Concurrency Control. Reliability, Basic Concepts, Nonblocking Commitment Protocols, Reliability and concurrency Control, Determining a Consistent View of the Network, Detection and Resolution of Inconsistency, Checkpoints and Cold Restart, Distributed Database Administration, Catalog Management in Distributed Databases, Authorization and Protection

UNIT – IV

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

UNIT - V

Database Integration, Scheme Translation, Scheme Integration, Query Processing Query Processing Layers in Distributed Multi-DBMSs, Query Optimization Issues.



Transaction Management Transaction and Computation Model Multidatabase
Concurrency Control, Multidatabase Recovery, Object Orientation And
Interoperability Object Management Architecture CORBA and Database
Interoperability Distributed Component Model COM/OLE and Database
Interoperability, PUSH-Based Technologies

TEXT BOOKS :

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

REFERENCES:

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



WIRELESS COMMUNICATION

UNIT I

Introduction to wireless communication systems:

Evolution of mobile radio communications, examples of wireless comm. Systems, paging systems, cordless telephone systems, comparison of various wireless systems.

modern wireless communication systems:

second generation cellular networks, third generation wireless networks, wireless in local loop, wireless local area networks, blue tooth and personal area networks.

UNIT II

Introduction to cellular mobile system

EMS: Spectrum Allocation, basic Cellular Systems, performance Criteria, Operation of cellular systems, analog cellular systems, digital Cellular Systems.

Cellular system design fundamentals:

Frequency Reuse, channel assignment strategies, handoff strategies, Interference and system capacity, tracking and grade off service, improving coverage and capacity.

UNIT III

Multiple access techniques for wireless communication:

Introduction to Multiple Access, FDMA, TDMA, Spread Spectrum multiple Access, space division multiple access, packet ratio, capacity of a cellular systems.

UNIT IV

Wireless networking:

Difference between wireless and fixed telephone networks, development of wireless networks, fixed network transmission hierarchy, traffic routing in wireless networks, wireless data services, common channel signaling, ISDN (Integrated Services digital Networks), advanced intelligent networks.

UNIT V

Intelligent cell concept and application:



Intelligent cell concept, applications of intelligent micro-cell Systems, in-Building Communication, CDMA cellular Radio Networks.

TEXT BOOKS:

1. Wireless Communications: Theodore S. Rappaport; Pearsons.
2. Mobile Cellular Telecommunication: W.C.Y.Lee; McGraw Hill

REFERENCE BOOK:

1. Mobile Communications: Jochen Schiller; Pearson



COMPUTER NETWORKS AND DATA MINING AND WAREHOUSING LAB

PART-A:

1. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP .
3. Implement Dijkstra 's algorithm to compute the Shortest path thru a graph.
4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm
5. Take an example subnet of hosts . Obtain broadcast tree for it.
6. Take a 64 bit playing text and encrypt the same using DES algorithm .
7. Write a program to break the above DES coding
8. Using RSA algorithm Encrypt a text data and Decrypt the same .

PART-B:

Credit Risk Assessment

Description: The business of banks is making loans. Assessing the credit worthiness of an applicant is of crucial importance. You have to develop a system to help a loan officer decide whether the credit of a customer is good, or bad. A bank's business rules regarding loans must consider two opposing factors. On the one hand, a bank wants to make as many loans as possible. Interest on these loans is the banks profit source. On the other hand, a bank cannot afford to make too many bad loans. Too many bad loans could lead to the collapse of the bank. The bank's loan policy must involve a compromise: not too strict, and not too lenient.

To do the assignment, you first and foremost need some knowledge about the world of credit. You can acquire such knowledge in a number of ways.

1. Knowledge Engineering. Find a loan officer who is willing to talk. Interview her and try to represent her knowledge in the form of production rules.
2. Books. Find some training manuals for loan officers or perhaps a suitable



textbook on finance. Translate this knowledge from text form to production rule form.

3. Common sense. Imagine yourself as a loan officer and make up reasonable rules which can be used to judge the credit worthiness of a loan applicant.
4. Case histories. Find records of actual cases where competent loan officers correctly judged when, and when not to, approve a loan application.

The German Credit Data:

Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such dataset, consisting of 1000 actual cases collected in Germany. credit dataset (original) Excel spreadsheet version of the German credit data (Down load from web).

In spite of the fact that the data is German, you should probably make use of it for this assignment. (Unless you really can consult a real loan officer)

A few notes on the German dataset

- DM stands for Deutsche Mark, the unit of currency, worth about 90 cents Canadian (but looks and acts like a quarter).
- owns_telephone. German phone rates are much higher than in Canada so fewer people own telephones.
- foreign_worker. There are millions of these in Germany (many from Turkey). It is very hard to get . German citizenship if you were not born of German parents.
- There are 20 attributes used in judging a loan applicant. The goal is to classify the applicant into one of two categories, good or bad.

Subtasks: (Turn in your answers to the following tasks)

1. List all the categorical (or nominal) attributes and the real-valued attributes separately.
2. What attributes do you think might be crucial in making the credit assessment? Come up with some simple rules in plain English using your selected attributes.
3. One type of model that you can create is a Decision Tree - train a Decision Tree using the complete dataset as the training data. Report the model obtained after training.
4. Suppose you use your above model trained on the complete dataset, and classify credit good/bad for each of the examples in the dataset. What % of examples can you classify correctly? (This is also called testing on the training set) Why do you think you cannot get 100 % training accuracy?



5. Is testing on the training set as you did above a good idea ? Why or Why not ?
6. One approach for solving the problem encountered in the previous question is using cross-validation ? Describe what is cross-validation briefly. Train a Decision Tree again using cross-validation and report your results. Does your accuracy increase/decrease ? Why ? (10 marks)
7. Check to see if the data shows a bias against “foreign workers” (attribute 20), or “personal-status” (attribute 9). One way to do this (perhaps rather simple minded) is to remove these attributes from the dataset and see if the decision tree created in those cases is significantly different from the full dataset case which you have already done. To remove an attribute you can use the preprocess tab in Weka’s GUI Explorer. Did removing these attributes have any significant effect? Discuss.
8. Another question might be, do you really need to input so many attributes to get good results? Maybe only a few would do. For example, you could try just having attributes 2, 3, 5, 7, 10, 17 (and 21, the class attribute (naturally)). Try out some combinations. (You had removed two attributes in problem 7. Remember to reload the arff data file to get all the attributes initially before you start selecting the ones you want.)
9. Sometimes, the cost of rejecting an applicant who actually has a good credit (case 1) might be higher than accepting an applicant who has bad credit (case 2). Instead of counting the misclassifications equally in both cases, give a higher cost to the first case (say cost 5) and lower cost to the second case. You can do this by using a cost matrix in Weka. Train your Decision Tree again and report the Decision Tree and cross-validation results. Are they significantly different from results obtained in problem 6 (using equal cost)?
10. Do you think it is a good idea to prefer simple decision trees instead of having long complex decision trees ? How does the complexity of a Decision Tree relate to the bias of the model ?
11. You can make your Decision Trees simpler by pruning the nodes. One approach is to use Reduced Error Pruning - Explain this idea briefly. Try reduced error pruning for training your Decision Trees using cross-validation (you can do this in Weka) and report the Decision Tree you obtain ? Also, report your accuracy using the pruned model. Does your accuracy increase ?
12. (Extra Credit): How can you convert a Decision Trees into “if-then-else rules”. Make up your own small Decision Tree consisting of 2-3 levels and convert it into a set of rules. There also exist different classifiers that output the model in the form of rules - one such classifier in Weka is rules.PART, train this model and report the set of rules obtained. Sometimes just one attribute can be good enough in making the decision, yes, just one ! Can you predict what attribute



that might be in this dataset ? OneR classifier uses a single attribute to make decisions (it chooses the attribute based on minimum error). Report the rule obtained by training a one R classifier. Rank the performance of j48, PART and oneR.

Task Resources:

Andrew Moore's Data Mining Tutorials (See tutorials on Decision Trees and Cross Validation) Decision Trees (Source: Tan, MSU)

- Tom Mitchell's book slides (See slides on Concept Learning and Decision Trees)
- Weka resources:
- Introduction to Weka (html version) (download ppt. version)
- Download Weka
- Weka Tutorial
- ARFF format
- Using Weka from command line

**WEB TECHNOLOGIES LAB****Objective :**

To create a fully functional website with mvc architecture. To Develop an online Book store using we can sell books (Ex amazon .com).

Hardware and Software required :

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

Week-1:

Design the following static web pages required for an online book store web site.

1) HOME PAGE:

The static home page must contain three **frames**.

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

Left frame : At least four links for navigation, which will display the catalogue of respective links.

For e.g.: When you click the link “IT” the catalogue for IT Books should be displayed in the Right frame.

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

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

Fig 1.1

2) LOGIN PAGE:

This page looks like below:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
IT ECE EEE CIVIL	Login <input type="text"/> Password <input type="text"/> <input type="button" value="submit"/> <input type="button" value="Rese"/>			





3) CATALOGUE PAGE:

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

The details should contain the following:

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



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

Note: Week 2 contains the remaining pages and their description.

Week-2:

4) CART PAGE:

The cart page contains the details about the books which are added to the cart. The cart page should look like this:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
IT	Book Name	Price	Quantity	Amount
ECE	Java 2	\$ 35.5	2	\$70
EEE	XML bible	\$ 40.5	1	\$ 40.5
CIVIL	Total Amount			\$ 130.5

**5) REGISTRATION PAGE:**

Create a “*registration form*” with the following fields

- 1) Name (Text field)
- 2) Password (password field)
- 3) E-mail id (text field)
- 4) Phone number (text field)
- 5) Sex (radio button)
- 6) Date of birth (3 select boxes)
- 7) Languages known (check boxes – English, Telugu, Hindi, Tamil)
- 8) Address (text area)

WEEK 3:**VALIDATION:**

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

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

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

Week-4:

Design a web page using **CSS (Cascading Style Sheets)** which includes the following:

- 1) Use different font, styles:

In the style definition you define how each selector should work (font, color etc.). Then, in the body of your pages, you refer to these selectors to activate the styles. For Example:



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

```
</HEAD>
```

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

For example:

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

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

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

</HTML>
```

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



- 3) Control the repetition of the image with the background-repeat property. As background-repeat: repeat Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.
- 4) Define styles for links as
- A:link
 - A:visited
 - A:active
 - A:hover

Example:

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

- 5) Work with layers: For example: LAYER 1
ON TOP:

```
<div style="position:relative; font-size:50px; z-index:2;">LAYER 1</div>
<div style="position:relative; top:-50; left:5; color:red; font-size:80px; z-index:1">LAYER 2</div>
```

LAYER 2 ON TOP:

```
<div style="position:relative; font-size:50px; z-index:3;">LAYER 1</div>
<div style="position:relative; top:-50; left:5; color:red; font-size:80px; z-index:4">LAYER 2</div>
```

- 6) Add a customized cursor:
Selector {cursor:value}

```

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

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

```

Week-5:

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

- 1) Title of the book
- 2) Author Name
- 3) ISBN number
- 4) Publisher name
- 5) Edition
- 6) Price

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

Display the XML file as follows.

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

Use XML schemas XSL and CSS for the above purpose.

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

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

**Week-6:****VISUAL BEANS:**

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

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

The color of the area should be changed dynamically for every mouse click. The color should also be changed if we change the color in the “property window “.

Week-7:

1) Install TOMCAT web server and APACHE.

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

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

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

Week-8:

User Authentication :

Assume four users user1,user2,user3 and user4 having the passwords pwd1,pwd2,pwd3 and pwd4 respectively. Write a servlet for doing the following.

1. Create a Cookie and add these four user id’s and passwords to this Cookie.
2. Read the user id and passwords entered in the Login form (week1) and authenticate with the values (user id and passwords) available in the cookies.

If he is a valid user(i.e., user-name and password match) you should welcome him by name(user-name) else you should display “ You are not an authenticated user “. Use init-parameters to do this. Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters() method.

Week-9:

Install a database(Mysql or Oracle).

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



Practice 'JDBC' connectivity.

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

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

Week-10:

Write a JSP which does the following job:

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

Week-11:

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

Week-12:

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

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



SOFTWARE TESTING METHODOLOGIES

UNIT - I

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

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

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

UNIT - II

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.

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

UNIT -III

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

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

UNIT - IV

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

Process Automation : Automation Building blocks, The Project Environment.

UNIT - V



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

Tailoring the Process : Process discriminants.

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

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

TEXT BOOK :

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

REFERENCES :

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw-Hill Edition.
2. Software Project Management, Joel Henry, Pearson Education.
3. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005.



MOBILE COMPUTING

UNIT - I

Introduction to Mobile Communications and Computing : Mobile Computing (MC) : Introduction to MC, novel applications, limitations, and architecture. Introduction to Network Technologies and Cellular Communications

GSM : Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

WLAN: Infrared vs. Radio Transmission, Infrastructure and Ad-Hoc Networks, IEEE 802.11, Blue Tooth: Use Scenarios, Physical Layer, MAC layer, Networking, Security, Link Management, HIPERLAN: Protocol Architecture, Physical Layer, Channel Access Control Sub-layer, MAC Sub-layer

UNIT - II

Wireless MAC : Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA.

Mobile Network Layer : Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunneling and encapsulation, optimizations), Dynamic Host Configuration Protocol (DHCP).

UNIT - III

Mobile Transport Layer : Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

UNIT - IV

Database Issues : Hoarding techniques, caching invalidation mechanisms, client server computing with adaptation, power-aware and context-aware computing, transactional models, query processing, recovery, and quality of service issues.

Data Dissemination: Communications asymmetry, classification of new data delivery mechanisms, push-based mechanisms, pull-based mechanisms, hybrid mechanisms, selective tuning (indexing) techniques.

**UNIT - V**

Mobile Ad hoc Networks (MANETs): Overview, Properties of a MANET, spectrum of MANET applications, routing and various routing algorithms such as AODV, DSR, DSDV etc., security in MANETs.

Protocols and Platforms for mobile computing : Wireless Application Protocol-WAP. (Introduction, protocol architecture, and treatment of protocols of all layers), XML J2ME, javaCARD,

TEXT BOOKS :

1. **Jochen Schiller**, "Mobile Communications", *Addison-Wesley*. (Chapters 4,7,9,10,11), second edition, 2004.
2. **Raj Kamal** " Mobile Computing", *Oxford University, Press 2007*

REFERENCES :

1. Reza Behravanfar, "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", ISBN: 0521817331, Cambridge University Press, October 2004,
2. Adelstein, Frank, Gupta, Sandeep KS, Richard III, Golden , Schwiebert, Loren, "Fundamentals of Mobile and Pervasive Computing", ISBN: 0071412379, McGraw-Hill Professional, 2005.
3. Hansmann, Merk, Nicklous, Stober, "Principles of Mobile Computing", *Springer*, second edition, 2003.
4. Martyn Mallick, "Mobile and Wireless Design Essentials", *Wiley DreamTech*, 2003.



OBJECT ORIENTED ANALYSIS AND DESIGN

UNIT I:

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle. Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.

UNIT II:

Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages. Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams.

UNIT III:

Basic Behavioral Modeling-I: Interactions, Interaction diagrams.

Basic Behavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams.

UNIT IV:

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

UNIT V:

Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams. Case Study: The Unified Library application

TEXT BOOKS:

1. Grady Booch, James Rumbaugh, Ivar Jacobson : The Unified Modeling Language User Guide, Pearson Education.
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.

REFERENCE BOOKS:

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-Hill Companies.
4. Mark Priestley: Practical Object-Oriented Design with UML, TATA McGrawHill
5. Applying UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education.



**DIGITAL IMAGE PROCESSING
(ELECTIVE-1)**

UNIT - I

Introduction : Examples of fields that use digital image processing, fundamental steps in digital image processing, components of image processing system. Digital Image Fundamentals: A simple image formation model, image sampling and quantization, basic relationships between pixels (p.nos. 15-17, 21- 44, 50-69).

UNIT - II

Image enhancement in the spatial domain : Basic gray-level transformation, histogram processing, enhancement using arithmetic and logic operators, basic spatial filtering, smoothing and sharpening spatial filters, combining the spatial enhancement methods (p.nos 76-141).

Image restoration : A model of the image degradation/restoration process, noise models, restoration in the presence of noise—only spatial filtering, Weiner filtering, **constrained least squares filtering**, geometric transforms; Introduction to the Fourier transform and the frequency domain, **estimating the degradation function** (p.nos 147-167, 220-243, 256-276).

UNIT - III

Color Image Processing : Color fundamentals, color models, pseudo color image processing, basics of full—color image processing, color transforms, **smoothing and sharpening**, color segmentation (p.nos: 282- 339).

Image Compression : Fundamentals, image compression models, error-free compression, lossy/predictive coding, image compression standards (p.nos: 409-467,492-510).

UNIT - IV

Morphological Image Processing : Preliminaries, dilation, erosion, open and closing, hit or miss transformation, basic morphologic algorithms (p.nos:519-550).

UNIT - V

Image Segmentation : Detection of discontinuous, edge linking and boundary detection, thresholding, region—based segmentation (p.nos: 567-617).



Object Recognition : Patterns and patterns classes, recognition based on decision–theoretic methods, matching, optimum statistical classifiers, **neural networks, structural methods – matching shape numbers, string matching** (p.nos: 693-735).

TEXT BOOK :

1. Digital Image Processing, Rafeal C.Gonzalez, Richard E.Woods, Second , Edition, Pearson Education/PHI.

REFERENCES :

1. Image Processing, Analysis, and Machine Vision, Milan Sonka, Vaclav Hlavac and Roger Boyle, Second Edition, Thomson Learning.
2. Introduction to Digital Image Processing with Matlab, Alasdair McAndrew, Thomson Course Technology
3. Digital Image Processing and Analysis, B. Chanda, D. Datta Majumder, Prentice Hall of India, 2003.
4. Computer Vision and Image Processing, Adrian Low, Second Edition, B.S.Publications
5. Digital Image Processing using Matlab, Rafeal C.Gonzalez, Richard E.Woods, Steven L. Eddins, Pearson Education.
6. Digital Image Processing, William K. Prat, Wily Third Edition
7. Digital Image Processing, Jahne, Springer.



**ARTIFITIAL INTELLIGENCE AND
NEURAL NETWORKS
(ELECTIVE-1)**

UNIT - I

Introduction : AI problems, foundation of AI and history of AI intelligent agents, Agents and Environments, the concept of rationality, the nature of environments, structure of agents, problem solving agents, problem formulation.

UNIT - II

Searching : Searching for solutions, uniformed search strategies – Breadth first search, depth first Search. Search with partial information (Heuristic search) Greedy best first search, A* search.

Game Playing: Adversal search, Games, minmax, algorithm, optimal decisions in multiplayer games, Alpha-Beta pruning, Evaluation functions, cutting of search.

UNIT – III

Knowledge Representation & Reasons: logical Agents, Knowledge – Based Agents, the Wumpus world, logic, propositional logic, Resolution patterns in propositional logic, Resolution, Forward & Backward Chaining.

First order logic: Inference in first order logic, propositional Vs. first order inference, unification & lifts forward chaining, Backward chaining, Resolution.

UNIT -IV

Characteristics of Neural Networks: Historical Development of Neural Networks Principles, **Artificial Neural Networks:** Terminology, Models of Neuron, Topology, Basic Learning Laws, Pattern Recognition Problem, Basic Functional Units, Pattern Recognition Tasks by the Functional Units.

UNIT - V

Feedforward Neural Networks: Introduction, Analysis of pattern Association Networks, Analysis of Pattern Classification Networks,

Feedback Neural Networks: Introduction, Analysis of Linear Auto-associative FF Networks, Analysis of Pattern Storage Networks.



Competitive Learning Neural Networks: Introduction, Analysis of Pattern Clustering Networks

TEXT BOOKS :

1. Artificial Intelligence – A Modern Approach. Second Edition, Stuart Russel, Peter Norvig, PHI/ Pearson Education.
2. Artificial Neural Networks B. Yagna Narayana, PHI.

REFERENCES :

1. Artificial Intelligence , 2nd Edition, E.Rich and K.Knight (TMH).
2. Artificial Intelligence and Expert Systems – Patterson PHI.
3. Expert Systems: Principles and Programming- Fourth Edn, Giarrantana/ Riley, Thomson.
4. PROLOG Programming for Artificial Intelligence. Ivan Bratka- Third Edition – Pearson Education.
5. Neural Networks Simon Haykin PHI
6. Artificial Intelligence, 3rd Edition, Patrick Henry Winston., Pearson Edition.



GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

B.Tech (IT)

IV Year – I Semester

MULTIMEDIA AND APPLICATION DEVELOPMENT

(ELECTIVE - I)

UNIT - I

Fundamental concepts in Text and Image: Multimedia and hypermedia, world wide web, overview of multimedia software tools. Graphics and image data representation graphics/image data types, file formats, Color in image and video: color science, color models in images, color models in video.

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 ActionScript MovieClip Subclasses.

UNIT - IV

Multimedia data compression : Lossless compression algorithm: Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Lossless Image Compression, Lossy compression algorithm: Quantization, Transform Coding, Wavelet-Based Coding, Embedded Zerotree of Wavelet Coefficients Set Partitioning in Hierarchical Trees (SPIHT).

UNIT - V

Basic Video Compression Techniques: Introduction to video compression, video compression based on motion compensation, search for motion vectors, MPEG, Basic Audio Compression Techniques.

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 Moock, SPD O,REILLY.

REFERENCES :

1. Digital Multimedia, Nigel chapman and jenny chapman, Wiley-Dreamtech
2. Macromedia Flash MX Professional 2004 Unleashed, Pearson.
3. Multimedia and communications Technology, Steve Heath, Elsevier(Focal Press).
4. Multimedia Applications, Steinmetz, Nahrstedt, Springer.
5. Multimedia Basics by Weixel Thomson
6. Multimedia Technology and Applications, David Hilman , Galgotia



SEMANTIC WEB AND SOCIAL NETWORKS

(ELECTIVE - I)

UNIT I

Web Intelligence

Thinking and Intelligent Web Applications, The Information Age, The World Wide Web, Limitations of Today's Web, The Next Generation Web, Machine Intelligence, Artificial Intelligence, Ontology, Inference engines, Software Agents, Berners-Lee www, Semantic Web Road Map, Logic on the semantic Web.

UNIT II

Knowledge Representation for the Semantic Web

Ontologies and their role in the semantic web, Ontologies Languages for the Semantic Web – Resource Description Framework (RDF) / RDF Schema, Ontology Web Language (OWL), UML, XML/XML Schema.

Ontology Engineering

Ontology Engineering, Constructing Ontology, Ontology Development Tools, Ontology Methods, Ontology Sharing and Merging, Ontology Libraries and Ontology Mapping, Logic, Rule and Inference Engines.

UNIT III

Semantic Web Applications, Services and Technology

Semantic Web applications and services, Semantic Search, e-learning, Semantic Bioinformatics, Knowledge Base, XML Based Web Services, Creating an OWL-S Ontology for Web Services, Semantic Search Technology.

UNIT IV

Social Network Analysis

What is networks analysis?, Development of Social Networks Analysis, Key concepts and measures in network analysis – The global structure of networks, The macro-structure of social networks, Personal networks.

UNIT IV

Electronic Sources for Network Analysis

Electronic Discussion networks, Blogs and Online Communities, Web-based networks. Modelling and aggregating social network data State-of-art in network



data representation, Ontological representation of social individuals, Ontological representation of social relationships, Aggregating and reasoning with social network data.

UNIT V

Developing social-semantic applications

Building Semantic Web Applications with social network features, Flink: the social networks of the Semantic Web community, Evaluation of web-based social network extraction.

Semantic-based Social Network Analysis in the sciences

Methodology – Data acquisition, Representation, storage and reasoning, Visualization and Analysis, Results – Descriptive analysis, Structural and cognitive effects on scientific performance.

TEXT BOOKS:

1. Thinking on the Web - Berners Lee, Godel and Turing, Wiley interscience, 2008.
Social Networks and the Semantic Web , Peter Mika, Springer, 2007.

REFERENCES:

1. Semantic Web Technologies , Trends and Research in Ontology Based Systems, J.Davies, Rudi Studer, Paul Warren, John Wiley & Sons.
2. Semantic Web and Semantic Web Services - Liyang Lu Chapman and Hall/ CRC Publishers, (Taylor & Francis Group)
3. Information Sharing on the semantic Web - Heiner Stuckenschmidt; Frank Van Harmelen, Springer Publications.
4. Programming the Semantic Web, T.Segaran, C.Evans, J.Taylor, O'Reilly, SPD.



**INFORMATION RETRIEVAL SYSTEMS
(ELECTIVE - II)**

UNIT-I

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

Information Retrieval System Capabilities: Search, Browse, Miscellaneous

UNIT-II

Cataloging and Indexing: Objectives, Indexing Process, Automatic Indexing, Information Extraction.

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

UNIT-III

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

Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters.

UNIT-IV

User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, Weighted searches of Boolean systems, Searching the Internet and hypertext.

Information Visualization: Introduction, Cognition and perception, Information visualization technologies.

UNIT-V

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

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

TEXTBOOK :

1. Kowalski, Gerald, Mark T Maybury: Information Retrieval Systems: Theory and Implementation, Kluwer Academic Press, 1997.



REFERENCES :

1. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and Algorithms, Prentice Hall, 1992.
2. Modern Information Retrieval By Yates Pearson Education.
3. Information Storage & Retrieval By Robert Korfhage – John Wiley & Sons.



SCRIPTING LANGUAGES

(ELECTIVE - II)

Unit I

Introduction to Scripting

Scripts and Programs, Origin of Scripting , Scripting Today, Characteristics of Scripting Languages, Web Scripting, and the universe of Scripting Languages. PHP Basics

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

Unit II

MySQL Basics

Introduction to MYSQL: Database Concepts, General Overview of MySQL database, Installation. Connecting and disconnecting from MYSQL Server, Querying the database, Data Definition Language, Functions and Logical operators, Access privilege system.

Unit III

Advanced PHP Programming

PHP and Web Forms, Files, PHP Authentication and Methodologies -Hard Coded, File Based, Database Based, IP Based, Login Administration,Uploading Files with PHP.

Unit IV

Sending Email using PHP, PHP Encryption Functions, the Mcrypt package, Building Web sites for the World – Translating Websites- Updating Web sites Scripts, Creating the Localization Repository, Translating Files, text, Generate Binary Files, Set the desired language within your scripts, Localizing Dates, Numbers and Times.



Unit V

Python

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

TEXT BOOKS:

1. The World of Scripting Languages , David Barron, Wiley India.
2. Beginning PHP and MySQL , 3rd Edition , Jason Gilmore, Apress Publications (Dream tech.).
3. Python Web Programming , Steve Holden and David Beazley , New Riders Publications.

REFERENCE BOOKS:

1. Open Source Web Development with LAMP using Linux , Apache, MySQL, Perl and PHP, Lee and B.Ware (Addison Wesley) Pearson Education.
2. Programming Python, M.Lutz, SPD.
3. PHP 6 Fast and Easy Web Development , Julie Meloni and Matt Telles, Cengage Learning Publications.
4. PHP 5.1, I.Bayross and S.Shah, The X Team, SPD.
5. Core Python Programming, Chun, Pearson Education.
6. Guide to Programming with Python, M.Dawson, Cengage Learning.



NETWORK PROGRAMMING

(ELECTIVE - II)

UNIT I:

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

UNIT II:

Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and related function. TCP client server : Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination, Crashing and Rebooting of server host shutdown of server host.

UNIT III:

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

UNIT IV:

Elementary UDP sockets: Introduction UDP Echo server function, lost datagram, summary of UDP example, Lack of flow control with UDP, determining outgoing interface with UDP. Elementary name and Address conversions: DNS, gethost by Name function, Resolver option, Function and IPV6 support, unname function, other networking information.

UNIT V:

IPC : Introduction, File and record locking, Pipes, FIFOs streams and messages, Name spaces, system IPC, Message queues, Semaphores. Remote Login: Terminal line disciplines, Pseudo-Terminals, Terminal modes, Control Terminals, rlogin Overview, RPC Transparency Issues.



TEXT BOOKS:

1. UNIX Network Programming, Vol. I, Sockets API, 2nd Edition. - W.Richard Stevens, Pearson Edn. Asia.
2. UNIX Network Programming, 1st Edition, - W.Richard Stevens. PHI.

REFERENCES:

1. UNIX Systems Programming using C++ T CHAN, PHI.
2. UNIX for Programmers and Users, 3rd Edition Graham GLASS, King abls, Pearson Education
3. Advanced UNIX Programming 2nd Edition M. J. ROCHKIND, Pearson Education



GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

B.Tech (IT)

IV Year- I Semester

MULTIMEDIA AND RICH INTERNET APPLICATIONS

(ELECTIVE - II)

UNIT I

Introduction to Multimedia: Internet and Multimedia communications, Multimedia Networks, Multimedia Applications, Multimedia Information representation- Digitization Principles, Text, Images, Audio and Video.

Compression Methods: Basic Coding Methods – Run Length coding, Huffman coding, Arithmetic coding, Discrete Cosine Transform, Differential PCM, Motion Compensated Prediction, Video Compression – JPEG, H.261, MPEG-1 Video, MPEG 2 and 3 Video, H.263, Wavelet and Fractal Image Compression, Audio Compression.

UNIT II

Multimedia Applications in Networks: Introduction, Application Level Framing, Audio/Video Conferencing-Session Directories, Audio/Video Conferencing, Adaptive Applications, Receiver Heterogeneity, Real Time Application with Resource Reservation, Video Server.

Applications Requiring: Reliable Multicast-White Board, Network Text Editor for Shared Text Editing, MultiTalk, Multicast file transfer, Multimedia Applications on the World Wide Web-Multicast Web Page Sharing, Audio/Video Streams in the www, Internet Multiplayer Games.

UNIT III

Web 2.0: What is web 2.0, Search, Content Networks, User Generated Content, Blogging, Social Networking, Social Media, Tagging, Social Marking, Rich Internet Applications, Web Services, Mashups, Location Based Services, XML, RSS, Atom, JSON, and VoIP, Web 2.0 Monetization and Business Models, Future of the Web.

UNIT IV

Rich Internet Applications (RIAs) with Adobe Flash and Flex: Adobe Flash- Introduction, Flash Movie Development, Learning Flash with Hands-on Examples, Publish your flash movie, Creating special effects with Flash, Creating a website splash screen, action script, web sources.



Adobe Flex 2- Introduction, Flex Platform Overview, Creating a Simple User Interface, Accessing XML data from your application, Interacting with Server Side Applications, Customizing your User Interface, Creating Charts and Graphs, Connection Independent RIAs on the desktop -Adobe Integrated Runtime(AIR), Flex 3 Beta.

UNIT-V

Ajax- Enabled Rich Internet Application: Introduction, Traditional Web Applications vs AjaxApplications, Rich Internet Application with Ajax, History of Ajax, Raw Ajax example using xmlhttprequest object, Using XML, Creating a full scale Ajax Enabled application, Dojo ToolKit.

TEXT BOOKS:

1. Multimedia Communications: Protocols and Applications , Franklin F Kuo, J.Joaquin Garcia , Wolf gang Effelsberg,Prentice Hall Publications.
2. Multimedia Communications : Applications, Networks, Protocols and Standards , Fred Halsall,Addison Wesley Publications.
3. AJAX, Rich Internet Applications, and Web Development for Programmers, Paul J Deitel and Harvey M Deitel,Deitel Developer Series,Pearson education.

REFERENCES:

1. Professional Adobe Flex 2 , Rich Tretola , Simon barber and Renaun rickson, Wrox, Wiley India Edition.
2. Multimedia Information Networking , Nalin K Sharda,PHI Learning.
3. Multimedia Computing, Communications & Applications , Ralf Steinmetz and Klara Nahrstedt,Pearson Education.
4. Multimedia Communication Systems: techniques, standards and Networks, K.R.Rao,Bojkovic and Milovanovic.,PHI Learning.
5. Programming Flex 3,C.Kazoun and J.Lott,SPD.
6. Dojo,J.E.Harmon,Pearson Education.
7. Adobe Flex 3:Training from the Source,Tapper&others,Pearson Education.
8. Principles of Multimedia,R.Parekh,TMH.
9. Mastering Dojo,R.Gill,C.Riecke and A.Russell,SPD.
10. Principles of Multimedia,R.Parekh,TMH.
11. Mastering Dojo,R.Gill,C.Riecke and A.Russell,SPD.



SCRIPTING LANGUAGES LAB

PHP

Week 1: Write a PHP script for the following.

- a. Find the biggest of 3 numbers.
- b. Find the factorial of a number (while loop)
- c. To reverse the digit (Use do while)
- d. Find the sum of the digits (Use for loop)
- e. Display the Fibonacci series for a particular limit.(Use for loop)
- f. Check the given letter is vowel or not.
- g. Check whether the given number is Prime or not.

Week 2:

- a. Write a PHP script to create an associative array with book details and display.
- b. Write a PHP script to create an array and try with all array functions.

Week 3:

- a. Write a PHP script to create Cookie, store a value “Ganesh” in the cookie.
- b. Write a PHP script to store, retrieve and delete data using session variables.
- c. Write a program for Cinema Ticketing. All the age should be over 12 years, if less than, don’t allow to get ticket. (apply the exception handling).

Week 4:

- a. Write a PHP program to display the contents of a file using fgets, fgets, fread functions.
- b. Write a PHP program to upload a file and display the contents in server.

Week 5:

Create a registration form which contains fields name, Roll No, Gender and a submit button. All the details should be displayed in the server page when the user clicks the submit button.



Week 6:

- a. Design a database in MYSQL using PHP. Create table in database. Store, Update, Delete and Retrieve data from the table. Display the data from the table.
- b. Design a PHP application that will provide a form containing fields to fill book detail (Book title, Author, Publication, ISBN, Price and category). Display filled details to the user.

Week 7:

Write a PHP script that will demonstrate POSIX regular expressions for validating
i)Name ii) Pin Code iii) Date iv) Email-id.

Week 8:

Using PHP and MySQL, develop a program to accept book information viz. Accession number, title, authors, edition and publisher from a web page and store the information in a database and to search for a book with the title specified by the user and to display the search results with proper headings.

Week 9:

Write a PHP script using scalar variables.

- i. Find the biggest of 3 numbers.
- ii. To check whether a number is positive or negative.
- iii. Find the factorial of a number (while loop)
- iv. To reverse the digit (Use do while)
- v. Find the sum of the digits (Use for loop)
- vi. Fibonacci series for a particular limit.(Use for loop)

PHYTHON

Week 10:

Write a Python script using basic data types.

- a. Find the biggest of 3 numbers.
- b. To check whether a number is positive or negative.
- c. Find the factorial of a number



- d. To reverse the digit
- e. Find the sum of the digits
- f. Fibonacci series for a particular limit.

Week 11:

- a. Write a Python script to test built in methods of Strings.
- b. Write a Python script to test various functions of List and Tuple.

Week 12:

- a. Write a Python script to test various functions of Dictionary.
- b. Write a Python script to define a function and calling the function by passing arguments. (using pass by value & pass by reference).

TEXT BOOKS

- a. Beginning.PHP.and.MySQL.3rd.Edition W. Jason Gilmore-Third Edition Apress publications
- b. Python-Standard Library by Frederik Luth- O'Relly
- c. Practical Programming in Python by Jeffery Elkener



SOFTWARE TESTING LAB

Part-A

1. Write programs in ‘C’ Language to demonstrate the working of the following constructs:
i) do...while ii) while....do iii) if...else iv) switch v) for
2. “A program written in ‘C’ language for Matrix Multiplication fails” Introspect the causes for its failure and write down the possible reasons for its failure.
3. Take any system (e.g. ATM system) and study its system specifications and report the various bugs.
4. Write the test cases for any known application (e.g. Banking application)
5. Create a test plan document for any application (e.g. Library Management System)
6. Study of any testing tool (e.g. Win runner)
7. Study of any web testing tool (e.g. Selenium)
8. Study of any bug tracking tool (e.g. Bugzilla, bugbit)
9. Study of any test management tool (e.g. Test Director)
10. Study of any open source-testing tool (e.g. Test Link)
11. Take a mini project (e.g. University admission, Placement Portal) and execute it.

During the Life cycle of the mini project create the various testing documents* and final test report document.

*Note: To create the various testing related documents refer to the text “Effective Software Testing Methodologies by William E. Perry”

PART-B

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.



MOBILE APPLICATION DEVELOPMENT

UNIT I

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

J2ME Architecture and Development Environment:J2ME Architecture, Small Computing Device Requirements, Run-Time Environment, MIDlet Programming, Java Language for J2ME, J2ME Software Development Kits, Hello World J2ME Style, Multiple MIDlets in a MIDlet Suite, J2ME Wireless Toolkit.

UNIT II

J2ME Best Practices and Patterns: The Reality of Working in a J2ME World, Best Practices

Commands, Items, and Event Processing: J2ME User Interfaces, Display Class, The Palm OS Emulator, Command Class, Item Class, Exception Handling.

UNIT III

High-Level Display: Screens: Screen Class, Alert Class, Form Class, Item Class, List Class, Text Box Class, Ticker Class.

Low-Level Display: Canvas : The Canvas, User Interactions, Graphics, Clipping Regions, Animation.

Record Management System: Record Storage, Writing and Reading Records, Record Enumeration, Sorting Records, Searching Records, Record Listener.

UNIT IV

JDBC Objects: The Concept of JDBC, JDBC Driver Types, JDBC Packages, Overview of the JDBC Process, Database Connection, statement Objects, Result set, Transaction Processing, Metadata, Data Types, Exceptions.

JDBC and Embedded SQL: Model Programs, Tables, Indexing, Inserting Data into Tables, Selecting Data from a Table, Metadata, Updating Tables, Deleting Data from a Table, Joining Tables, Calculating Data, Grouping and Ordering Data, Sub queries, VIEWS.



UNIT V

Generic Connection Framework: The Connection, Hypertext Transfer Protocol, Communication Management Using HTTP Commands, Session Management, Transmit as a Background Process

TEXT BOOKS:

1. J2ME: The Complete Reference, James Keogh, Tata McGrawHill.

REFERENCES:

1. Enterprise J2ME: Developing Mobile Java Applications, Michael Juntao Yuan, Pearson Education, 2004.
2. Beginning Java ME Platform, Ray Rischpater, Apress, 2009.
3. Beginning J2ME: From Novice to Professional, Third Edition, Sing Li, Jonathan B. Knudsen, Apress, 2005.
4. Kicking Butt with MIDP and MSA: Creating Great Mobile Applications, First Edition, J.Knudsen, Pearson.



GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
B.Tech (IT) IV Year – II Semester

SOFTWARE PROJECT MANAGEMENT
(Elective-III)

UNIT - I

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

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

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

UNIT - II

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.

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

UNIT -III

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

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

UNIT - IV

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

Process Automation : Automation Building blocks, The Project Environment.

UNIT - V

Project Control and Process instrumentation : The seven core Metrics,



Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

Tailoring the Process : Process discriminants.

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

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

TEXT BOOK :

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

REFERENCES :

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw-Hill Edition.
2. Software Project Management, Joel Henry, Pearson Education.
3. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005.



**E-COMMERCE
(ELECTIVE-III)**

UNIT - I

Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-commerce

Consumer applications, E-Commerce organization applications. Consumer Oriented Electronic commerce - Mercantile Process models.

UNIT - II

Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in

Electronic Payment systems. Inter Organizational Commerce - EDI, EDI Implementation, Value added networks.

UNIT - III

Intra Organizational Commerce - work Flow, Automation Customization and internal Commerce, Supply chain Management.

Corporate Digital Library - Document Library, digital Document types, corporate Data Warehouses.

UNIT- IV

Advertising and Marketing - Information based marketing, Advertising on Internet, on-line marketing process, market research.

Consumer Search and Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering.

UNIT - V

Multimedia - key multimedia concepts, Digital Video and electronic Commerce, Desktop video processings, Desktop video conferencing.

TEXT BOOK :

1. Frontiers of electronic commerce – Kalakata, Whinston, Pearson.



REFERENCES :

1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, John Wiley.
2. E-Commerce, S.Jaiswal – Galgotia.
3. E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang.
4. Electronic Commerce – Gary P.Schneider – Cengage Learning..
5. E-Commerce – Business, Technology, Society, Kenneth C.Taudon, Carol Guyerico Traver.
6. Electronic Commerce, B.Bhaskar, 3rd edition, TMH.



**WEB SERVICES
(ELECTIVE-III)**

UNIT I

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

UNIT II

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

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

UNIT III

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

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

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

UNIT IV

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



UNIT V

Web Services Interoperability – Means of ensuring Interoperability, Overview of .NET and J2EE. **Web Services Security** – XML security frame work, XML encryption, XML digital signature, XKMS structure, guidelines for signing XML documents.

TEXT BOOKS:

1. Developing Java Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, Wiley India, rp – 2008.
2. Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education, 2008.
3. XML, Web Services, and the Data Revolution, F.P.Coyle, Pearson Education.

REFERENCES:

1. Building Web Services with Java, 2nd Edition, S. Graham and others, Pearson Edn., 2008.
2. Java Web Services, D.A. Chappell & T. Jewell, O'Reilly,SPD.
3. McGovern, et al., “Java Web Services Architecture”, Morgan Kaufmann Publishers,2005.
4. J2EE Web Services, Richard Monson-Haefel, Pearson Education.
5. Web Services, G. Alonso, F. Casati and others, Springer, 2005.
6. Java Web Services Programming, R.Mogha, V.V.Preetham, Wiley India Pvt.Ltd.



**WEB SERVICES
(ELECTIVE-III)**

UNIT I

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

UNIT II

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UNIT V

Web Services Interoperability – Means of ensuring Interoperability, Overview of NET and J2EE. **Web Services Security** – XML security frame work, XML encryption, XML digital signature, XKMS structure, guidelines for signing XML documents.

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2. Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education, 2008.
3. XML, Web Services, and the Data Revolution, F.P.Coyle, Pearson Education.

REFERENCES:

1. Building Web Services with Java, 2nd Edition, S. Graham and others, Pearson Edn., 2008.
2. Java Web Services, D.A. Chappell & T. Jewell, O'Reilly,SPD.
3. McGovern, et al., “Java Web Services Architecture”, Morgan Kaufmann Publishers,2005.
4. J2EE Web Services, Richard Monson-Haefel, Pearson Education.
5. Web Services, G. Alonso, F. Casati and others, Springer, 2005.
6. Java Web Services Programming, R.Mogha, V.V.Preetham, Wiley India Pvt.Ltd.



GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

B.Tech (IT)

IV Year – II Semester

HUMAN COMPUTER INTERACTION

(ELECTIVE-IV)

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

Develop System Menus and Navigation Schemes - Select the Proper Kinds of Windows - Select the Proper Device-Based Controls - Choose the Proper Screen Based Controls

UNIT – V

Write Clear Text and Messages - Create Meaningful Graphics, Icons and Images- Choose the Proper Colors- Test, Test, and Retest

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

TEXT BOOKS :

1. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamaTech.
2. Designing the user interface. 3rd Edition Ben Shneidermann , Pearson Education Asia.



REFERENCES :

1. Human – Computer Interaction. ALAN DIX, JANET FINCAY, GRE GORYD, ABOWD, RUSSELL BEALG, PEARSON.
2. Interaction Design PRECE, ROGERS, SHARPS. Wiley Dreamtech,
3. User Interface Design, SorenLauesen , Pearson Education.



GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

B.Tech (IT)

IV Year – II Semester

MIDDLEWARE TECHNOLOGIES

(ELECTIVE-IV)

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.

Introducing C# and the .NET Platform; Understanding .NET Assemblies; Object – Oriented Programming with C#; Callback Interfaces, Delegates, and Events.

UNIT III

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.

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.

UNIT-IV

Existential CORBA : CORBA initialization protocol, CORBa activation services, CORBAIDL mapping CORBA java- to- IDL mapping, The introspective CORBA/ Java object.

Java Bean Component Model : Events, properties, persistency, Introspection of beans, CORBA Beans.

UNIT-V

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 :

1. Client/Server programming with Java and CORBA Robert Orfali and Dan Harkey, John Wiley & Sons ,SPD 2nd Edition
2. Java programming with CORBA 3rd Edition, G.Brose, A Vogel and K.Duddy, Wiley-dreamtech, India John wiley and sons

REFERENCES :

1. Distributed Computing, Principles and applications, M.L.Liu, Pearson Education
2. Client/Server Survival Guide 3rd edition Robert Orfali Dan Harkey & Jeri Edwards, John Wiley & Sons
3. Client/Server Computing D T Dewire, TMH.
4. IBM Webspere Starter Kit Ron Ben Natan Ori Sasson, TMh, New Delhi
5. Programming C#, Jesse Liberty, SPD-O'Reilly.
6. C# Preciesely Peter Sestoft and Henrik I. Hansen, Prentice Hall of India
7. Intoduction to C# Using .NET Pearson Education
8. C# How to program, Pearson Education
9. C# and the .NET Platform Andrew Troelsen, Apress Wiley-dreamtech, India Pvt Ltd



DESIGN PATTERNS

(ELECTIVE-IV)

UNIT –I

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

UNIT-II

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

UNIT-III

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

Structural Pattern Part-I : Adapter, Bridge, Composite.

UNIT-IV

Structural Pattern Part-II : Decorator, Façade, Flyweight, Proxy.

Behavioral Patterns Part-I : Chain of Responsibility, Command, Interpreter, Iterator.

UNIT-V

Behavioral Patterns Part-II : Mediator, Memento, Observer, State, Strategy, Template Method ,Visitor, Discussion of Behavioral Patterns. What to Expect from Design Patterns, A Brief History, The Pattern Community An Invitation, A Parting Thought.

TEXT BOOK :

1. Design Patterns By Erich Gamma, Pearson Education



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.
3. JAVA Enterprise Design Patterns Vol-III By Mark Grand ,Wiley DreamTech.



**CLOUD COMPUTING
(ELECTIVE-IV)**

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



**Mobile Application Development
(Through J2ME) LAB**

Objective:

In this lab, a student is expected to design, implement, document and present a mobile client/server system using standard Java and Java 2 Micro Edition (J2ME) platform. Specifically it is required to design and implement a system that consists mainly of a mobile client (MC) and a Proxy Server (PS). MC will be written in J2ME, MIDP 2.0, while PS will be written in standard Java. It is necessary to use a mobile phone emulator to develop and demonstrate the experiments.

It may be necessary to use other components or existing resources (servers) as needed. For instance a database local to PS or a web service available on the Internet that can be invoked by the PS.

Week - 1: Installation of Java Wireless Toolkit (J2ME)

1) If the Java Development Kit (JDK) is not there or only having the Java Runtime Environment (JRE) installed, install the latest JDK from <http://java.sun.com/javase/downloads/index.jsp>. Current stable release of Java is JDK 6 Update 7 but check the web page in case there are newer non-beta releases available.

2) Next, download the **Java Wireless Toolkit** (formerly called J2ME Wireless Toolkit) from: <http://java.sun.com/products/sjwtoolkit/download.html>.

3) Run the installer (for example, for Windows it is: `sun_java_wireless_toolkit-2_5_2-windows.exe`). The installer checks whether a compatible Java environment has been pre-installed. If not, it is necessary to uninstall old versions of Java and perform Step 1 again.

Once after successful installation of Java and the tool kit compile this program and run the following program in the toolkit.

Steps to run this program in toolkit:

1. Start -> All Programs -> Sun Java Tool Kit -> Wireless Tool Kit
2. Click New Project – Enter Project Name -> Enter Class Name -> Click on Create Project.
3. Choose appropriate API Selection and Configurations.
4. Place Java Source file in WTK2.1 / WTK2.2\apps\projectname\src
5. Build the Project.



6. Run the Project.

```

import javax.microedition.lcdui.*;
import javax.microedition.midlet.*;
public class HelloWorld extends MIDlet{
private Form form;
private Display display;
public HelloWorld(){
super();
}
public void startApp(){
    form = new Form("Hello World");
    String msg = "Hello World!!!!!!";
    form.append(msg);
    display = Display.getDisplay(this);
    display.setCurrent(form);
}
public void pauseApp(){ }
public void destroyApp(boolean unconditional){
notifyDestroyed();
}
}

```

Week - 2 Working with J2ME Features:

Working with J2ME Features: Say, creating a Hello World program Experiment with the most basic features and mobile application interaction concepts (lists, text boxes, buttons, radio boxes, soft buttons, graphics, etc)

2.1 Create a program which creates to following kind of menu.

- cut
- copy
- paste
- delete

- select all
- unselect all

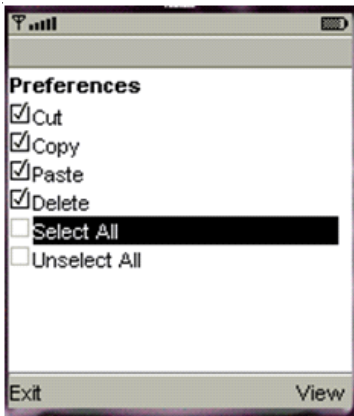
2.2 Event Handling.



Create a menu which has the following options:

- cut - can be on/off
- copy - can be on/off
- paste - can be on/off
- delete - can be on/off
- select all - put all 4 options on
- unselect all - put all 4 options off

2.3. Input checking



Create an MIDP application which examine, that a phone number, which a user has entered is in the given format.

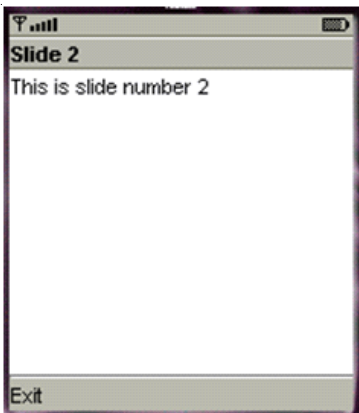
- Area code should be one of the following: 040, 041, 050, 0400, 044
- There should 6-8 numbers in telephone number (+ area code)

Week - 3 Threads & High Level UI:



3.1. Create a slide show which has three slides, which includes only text. Program should change to the new slide after 5 seconds. After the third slide program returns to the first slide.

3.2 High-level UI



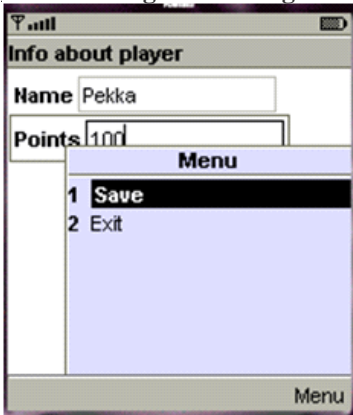
Create a MIDP application, which show to the user 5-10 quiz questions. All questions have 4 possible options and one right option exactly. Application counts and shows to the user how many right answers were right and shows them to user.

3.3 Create a MIDP application, where the user can enter player name and points.



The program saves the information to the record using RMS at MIDP device. Program should also print out the top 10 player list to the end user. You can use this class in your game if you made own class for saving and reading record sets.

Week - 4 Working on Drawing and Images



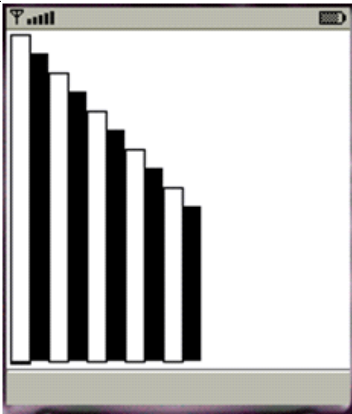
4.1 Create a slide show which has three slides, which includes pictures at PNG format. Program should change to the new slide other 5 seconds.

4.2 Create a MIDP application, which draws a bar graph to the display. Data values



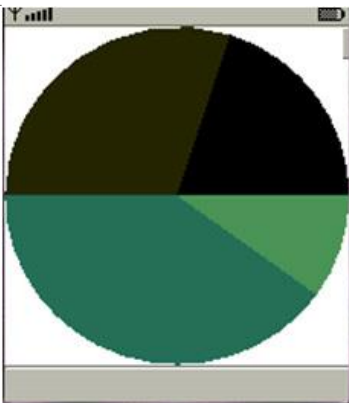
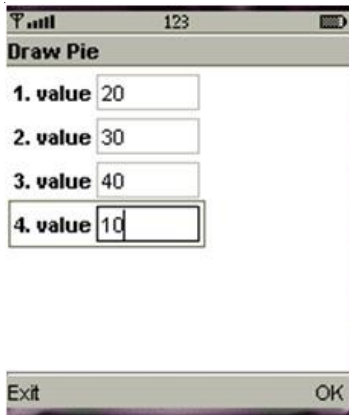
can be given at `int[]` array.

4.3 Create a MIDP application, which draws a bar graph to the display. Data values



can be given at `int[]` array. You can enter four data (integer) values to the input text field.

Week - 5 Developing Networked Applications using the Wireless Toolkit



Creating a Simple Client-Server Application

Create, compile and run a basic UDP-based client-server application.

Creating the Datagram Server project

- 1) Click on Wireless Toolkit 2.5.2 under the group: **All Programs!****Sun Java (TM) Wireless Toolkit 2.5.2.**
- 2) Click on **'New Project...'** button.
- 3) Enter project name as **'DatagramServer'**. Enter MIDlet name as **'DatagramServer'**. Note that the Midlet name is the same as the name of the class in the source code, which extends the MIDlet class, otherwise the application won't run.
- 4) Another window pops up where it is required to select a target platform. Select **'MIDP 1.0'** from the drop down list.



- 5) After clicking OK, the project is created; and the Wireless Toolkit tells that the name of the folder where source code files are created. The path of the source code folder is displayed in the debug output window.

Creating and Compiling the DatagramServer source files

The Wireless Toolkit does not come with an IDE by default so Use any IDE or a text editor like Notepad.

- 1) Create a new text file called **DatagramServer.java** in the source folder of the project. The exact path of this folder is displayed in the Wireless Toolkit window.
- 2) Paste contents **DatagramServer.java** from into the source file.

Running your Server application on the Phone simulator

- 1) After compiling the project successfully, click on the Run button in the Wireless Toolkit window.
- 2) A graphical window depicting a phone handset will appear with the name of your application highlighted on its screen as shown below.
- 3) To start the application, click on the right soft-key (marked with a dot) below the **'Launch'** command.
- 4) The phone simulator might ask if it is OK to run the network application. Select **'Yes'** by clicking on the appropriate soft-key. The server is now up and running.
- 5) Keep the server running during the creation, compilation and running of the Datagram Client application.

Creating the DatagramClient project

- 1) Use the same instance of the Wireless Toolkit that is used for creating and compiling the Datagram Server project.
- 2) Click on **'New Project...'** button.
- 3) A new window pops up. Enter project name as **'DatagramClient'**. Enter MIDlet name as **'DatagramClient'**. Note that the Midlet name is the same as the name of the class in the source code, which extends the MIDlet class.
- 4) Another window pops up where one has to select a target platform. Select **'MIDP 1.0'** from the drop down list.
- 5) After clicking OK, the project is created and the Wireless Toolkit tells where to place the source code files. The path of the source code folder is displayed in the debug output window as explained before.



Creating and Compiling the DatagramClient source files

- 1) Create a new text file called **DatagramClient.java** in the source folder of the project.
- 2) Paste contents **DatagramClient.java** into the source file.
- 3) Then click on the Build button in the Wireless Toolkit window. If the compilation is OK, it will say Build Complete in the window's debug output window, otherwise it will show the errors. Note: In the source code, use the `System.out.println()` statement to output debug information to this window.

Running your Client application on the Phone simulator

- 1) After compiling the project successfully, click on the Run button in the Wireless Toolkit window.
- 2) A graphical window depicting a phone handset will appear with the name of the application highlighted on its screen.
- 3) To start the application, click on the right soft-key (marked with a dot) below the '**Launch**' command.
- 4) The phone simulator might ask if it is OK to run the network application. Select '**Yes**' by clicking on the appropriate soft-key. The client is now up and running.
- 5) When the client executes on the phone simulator, one should see a text box with the caption 'Message'. Enter any message and press the right soft-key (corresponding to Send). If the client-server application is working properly, the screen of the server phone will display the message sent by the client and the client screen will now display a message sent by the server in response. The response message from the server is the original client message in reverse.
- 6) Try various features of the phone simulator including the different look-and-feel options.

Week - 6 Authentication with a Web Server

6.1 Write a sample program to show how to make a SOCKET Connection from j2me phone.

This J2ME sample program shows how to how to make a SOCKET Connection from a J2ME Phone. Many a times there is a need to connect backend HTTP server from the J2ME application. shows how to make a SOCKET connection from the phone to port 80.

6.2 Login to HTTP Server from a J2ME Program

This J2ME sample program shows how to display a simple LOGIN SCREEN on



the J2ME phone and how to authenticate to a HTTP server.

Many J2ME applications for security reasons require the authentication of the user. This free J2ME sample program, shows how a J2ME application can do authentication to the backend server.

Note: Use Apache Tomcat Server as Web Server and Mysql as Database Server.

Week - 7 & 8 Web Application using J2ME

The following should be carried out with respect to the given set of application domains: (Assume that the Server is connected to the well-maintained database of the given domain. Mobile Client is to be connected to the Server and fetch the required data value/information)

- Students Marks Enquiry
- Town/City Movie Enquiry
- Railway/Road/Air (For example PNR) Enquiry/Status
- Sports (say, Cricket) Update
- Town/City Weather Update
- Public Exams (say Intermediate or SSC)/ Entrance (Say EAMCET) Results Enquiry

Divide Student into Batches and suggest them to design database according to their domains and render information according the requests.