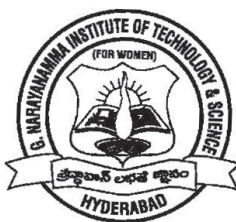# ACADEMIC REGULATIONS
COURSE STRUCTURE
AND
DETAILED SYLLABUS

INFORMATION TECHNOLOGY

FOR

B.TECH FOUR YEAR DEGREE COURSE

(Applicable for the batch admitted during 2012-2013)

G.NARAYANAMMA INSTITUTE OF TECHNOLOGY & SCIENCE

AUTONOMOUS (FOR WOMEN)

SHAIKPET, HYDERABAD – 500 008. A.P.

ACADEMIC REGULATIONS GN-R-12 FOR B.TECH. REGULAR COURSE

*(Effective for the students admitted into I year from the Academic Year **2012-2013** and onwards)*

1. **Award if B.Tech. Degree**

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

   i. **Pursued a course of study for not less than four academic years and not more than eight academic years.**

   ii. Registered for **200 credits** and secured **200 credits**

2. Students, who fail to fulfill 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**

   The following courses of study are offered at present for specialization for the B. Tech. Course:

Branch Code	Branch
02	Electrical and Electronics Engineering
04	Electronics and Communication Engineering
05	Computer Science and Engineering.
12	Information Technology
17	Electronics and Telematics Engineering.
22	Instrumentation and Control Engineering.

4. **Distribution and Weightage of Marks**

   i.   The performance of a student in each semester shall be evaluated subject –wise with a maximum of 100 marks for theory and 75 marks for practical subject. In addition, Industry oriented mini-project, seminar, comprehensive viva and project work shall be evaluated for 50, 50 , 100 and 200 marks respectively.

   ii. For theory subjects the distribution shall be 25 marks for Internal Evaluation and 75 marks for the End-Examination.

   iii. For theory subjects, during the semester there shall be 2 midterm examinations. Each mid term examination consists of Part-A(Objective Type) for 5 marks and Part-B(subjective paper) for 15 marks with a duration of 2 Hrs. Assignment carries 5 marks.

   Subjective paper shall contain 5 questions(Covering all the units) of which student has to answer 3 questions each 5 marks

   Students performance in both the mid exams will be considered for evaluating the internal marks.

FOR THE 2012 ADMITTED BATCH ONLY

Students performance in both the mid exams will be considered for evaluating the internal marks. For the best scored mid weightage of 75 % , and for the other 25 % weightage will be given.

FOR THE 2013 ADMITTED BATCH

Students performance in both the mid exams will be considered for evaluating the internal marks. Average performance of the two mids will be considered for evaluating internal marks.

$$\text{Average Performance} = \frac{(X1 + X2)}{2}$$

X1= First Mid Marks, X2 = Second Mid Marks

The first mid term examination shall be conducted for 50 % of the syllabus and the second mid term examination shall be conducted for the remaining 50 % of the syllabus.

iv. For practical subjects there shall be a continuous evaluation during the semester for 25 sessional marks and 50 end examination marks. Out of the 25 marks for internal, day-to-day work in the laboratory shall be evaluated for 15 marks and internal examination for practical shall be evaluated for 10 marks conducted by the concerned laboratory teacher. The end examination shall be conducted with external examiner and laboratory teacher. The external examiner shall be appointed from the panel of examiners as decided by BOS.

v. For the Engineering Drawing subject the distribution shall be 25 marks for internal evaluation (15 marks for day-to-day work and 10 marks for internal tests) and 75 marks for end examination. Two internal tests will be conducted and Students performance in both the mid exams will be considered for evaluating the internal marks. For the best scored mid weightage of 75 % , and for the other 25 % weightage will be given

vi. There shall be an industry-oriented mini-Project, in collaboration with an industry of their specialization, to be taken up during the vacation after III year II Semester examination. However, the mini project and its report shall be evaluated in IV year I Semester. The industry oriented mini project shall be submitted in report form and should be presented before the committee, which shall be evaluated for 50 marks. The committee consists of head of the department, the supervisor of mini project and a senior faculty member of the department. There shall be no internal marks for industry oriented mini project.

vii. There shall be a seminar presentation in IV year II Semester. For the seminar, the student shall collect the information on a specialized topic and prepare a technical report, showing his understanding over the topic, and submit to the department, which shall be evaluated by the Departmental committee consisting of Head of the department, seminar supervisor and a senior faculty member. The seminar report shall be evaluated for 50 marks. There shall be no external examination for seminar.

viii. There shall be a Comprehensive Viva-Voce in IV year II semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of (i) Head of the Department (ii) two Senior Faculty members of the Department. The Comprehensive Viva-Voce is aimed to assess the students' understanding in various subjects he / she studied during the B.Tech course of study. The Comprehensive Viva-Voce is evaluated for 100 marks by the Committee. There are no internal marks for the Comprehensive viva-voce.

ix. Out of a total of 200 marks for the project work, 100 marks shall be for Internal Evaluation and 100 marks for the End Semester Examination. The End Semester Examination (viva-voce) shall be conducted by the committee consists of External examiner, HOD, the supervisor of the major project and a senior faculty of the dept. The topics for industry oriented mini project, seminar and project work shall be different from each other. The evaluation of project work shall be conducted at the end of the IV year II Semester. Out of the 100 marks for Internal evaluation 50 marks will be awarded by the supervisor, 50 marks will be awarded by the committee constituted by HOD shall be on the basis of two seminars given by each student on the topic of her project.

5. Attendance Requirements:

i. A student shall be eligible to appear for University examinations if he acquires a minimum of 75% of attendance in aggregate of all the subjects.

ii. **Shortage of Attendance below 65% in aggregate shall in <u>NO</u> case be condoned** .

iii. Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester or I year may be granted by the College Academic Committee.

iv. A student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester / I

year, as applicable. They may seek re-admission for that semester / I year when offered next.

v. Students whose shortage of attendance is not condoned in any semester / I year are not eligible to take their end examination of that class and their registration shall stand cancelled.

vi. A stipulated fee shall be payable towards condonation of shortage of attendance.

6. Minimum Academic Requirements:

The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in item no.**5**

i. A student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory or practical design or drawing subject or project if he secures not less than 35% 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.

ii. A student shall be promoted from II to III year only if he fulfils the academic requirement **of 36** credits from **TWO** regular and **ONE** supplementary examinations of I year I Semester, and **ONE** regular and **ONE** supplementary examination of I Year II Semester, and **ONE** regular examination of II year I semester irrespective of whether the candidate takes the examination or not.

iii. A student shall be promoted from third year to fourth year only if he fulfils the academic requirements of total **60 c**redits from the following examinations, whether the candidate takes the examinations or not.

a. Three regular and two supplementary examinations of I year I Semester.

b. Two regular and two supplementary examinations of I year II Semester

c. Two regular and one supplementary examinations of II year I semester.

d. One regular and one supplementary examinations of II year II semester.

e. One regular examination of III year I semester.

iv. A student shall register and put up minimum attendance in all 200 credits and earn the 200 credits. Marks obtained in all 200 credits shall be considered for the calculation of percentage of marks.

v.   Students who fail to earn 200 credits as indicated in the course structure within eight academic years from the year of their admission shall forfeit their seat in B.Tech course and their admission shall stand cancelled.

7. Course pattern:

i.   The entire course of study is of four academic years. All the I,II,III and IV years are on semester pattern.

ii. A student eligible to appear for the end examination in a subject, but absent at it or has failed in the end examination may appear for that subject at the supplementary examination.

8. Award of Class:

After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of B. Tech. Degree he shall be placed in one of the following four classes:

Class Awarded	% of marks to be secured	
First Class with Distinction	70% and above	From the aggregate marks secured for the best 200 Credits.
First Class	Below 70% but not less than 60%	
Second Class	Below 60% but not less than 50%	
Pass Class	Below 50% but not less than 40%	

(The marks in internal evaluation and end examination shall be shown separately in the marks memorandum)

9. Minimum Instruction Days:

The minimum instruction days for each semester shall be 90 clear instruction days.

10. There shall be no branch transfers after the completion of admission process.

11. General:

i.   Where the words "he", "him", "his", occur in the regulations, they include "she", "her", "hers".

ii. The academic regulation should be read as a whole for the purpose of any interpretation.

iii. In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the PRINCIPAL/DIRECTOR is final.

iv. 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.

ACADEMIC REGULATIONS FOR B. TECH. (LATERAL ENTRY SCHEME)
(Effective for the students getting admitted into II year from the Academic Year 2013-2014 and onwards)

1. The Students have to acquire 150 credits from II to IV year of B.Tech. Program (Regular) for the award of the degree.

Register for **150** credits and secure **150** credits.

2. Students, who fail to fulfil the requirement for the award of the degree in 6 consecutive academic years from the year of admission, shall forfeit their seat.

3. The same attendance regulations are to be adopted as that of B. Tech. (Regular).

4. Promotion Rule:

A student shall be promoted from third year to fourth year only if he fulfils the academic requirements of 36 **credits from the examinations.**

a. Two regular and one supplementary examinations of II year I semester.

b. One regular and one supplementary examinations of II year II semester.

c. One regular examination of III year I semester.

5. Award of Class:

After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of B. Tech. Degree he shall be placed in one of the following four classes:

Class Awarded	% of marks to be secured	From the aggregate marks secured for the best 200 Credits.
First Class with Distinction	70% and above	
First Class	Below 70% but not less than 60%	
Second Class	Below 60% but not less than 50%	
Pass Class	Below 50% but not less than 40%	

MALPRACTICES RULES
DISCIPLINARY ACTION FOR / IMPROPER CONDUCT IN EXAMINATIONS

	Nature of Malpractices/ Improper conduct	Punishment
	If the candidate:	
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled.

3.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all END examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.
4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all END examinations. The continuation

		of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
6.	Refuses to obey the orders of the Chief Superintendent/ Assistant – Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.

	tendency to disrupt the orderly conduct of the examination.	
7.	Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all END examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be

		permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.
		Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.
10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the PRINCIPAL/ DIRECTOR for further action to award suitable punishment.	

B. Tech - Information Technology
Course Structure of G12

I YEAR I SEMESTER

Code	Subject	L	T/P/C	C
120007	Mathematics-I	4	1	4
120201	Basic Electrical Engineering	4	1	4
120501	Computer Programming	4	1	4
120006	Mathematics –II	4	1	4
120001	Engineering Chemistry	4	-	4
120502	Computer Programming Lab	-	3	2
120202	Basic Electrical Engineering Lab	-	3	2
120002	Engineering Chemistry Lab	-	3	2
	Total	**20**	**13**	**26**

I YEAR II SEMESTER

Code	Subject	L	T/P/C	C
120016	Mathematics-III	4	1	4
120012	Engineering Drawing	2	4	3
120017	Engineering Physics	4	1	4
120013	English	3	1	3
120503	Data Structures	4	1	4
120018	Engineering Physics Lab	-	3	2
120014	English Lab	-	3	2
120504	Data Structures Lab	-	3	2
	Total	**17**	**17**	**24**

B. Tech - Information Technology
Course Structure of G12

II YEAR I SEMESTER

Code	Subject	L	T/P/C	C
120510	Mathematical Foundation of Computer Science	3	1	3
120403	Electronic Devices and Circuits	3	1	3
121203	Operating Systems	4	1	4
121201	Object Oriented Programming	4	1	4
120019	Environmental Studies	3	-	3
120509	Digital Logic Design	3	1	3
121204	Operating Systems Lab	-	3	2
121202	Object Oriented Programming Lab	-	3	2
	Total	**20**	**11**	**24**

II YEAR II SEMESTER

Code	Subject	L	T/P/D	C
120515	Probability and Statistics	3	1	3
120516	Software Engineering	3	1	3
121205	Advanced Data Structures	4	1	4
120511	Computer Organization	4	1	4
121207	Database Management Systems	4	1	4
120514	Principles of Programming Languages	4	1	4
121208	Database Management Systems Lab	-	3	2
121206	Advanced Data Structures Lab	-	3	2
	Total	**22**	**12**	**26**

B. Tech - Information Technology
Course Structure of G12

III YEAR I SEMESTER

Code	Subject	L	T/P/C	C
121214	Web Technologies	4	1	4
121212	Microprocessor and Assembly Language Programming	4	1	4
121209	Computer Graphics	3	1	3
121210	Computer Networks	4	1	4
120022	Managerial Economics and Financial Analysis	3	1	3
121211	Design and Analysis of Algorithms	3	1	3
121215	Web Technologies Lab	-	3	2
121213	Microprocessor and Assembly Language Programming Lab	-	3	2
	Total	**21**	**12**	**25**

III YEAR II SEMESTER

Code	Subject	L	T/P/D	C
120530	Object Oriented Analysis and Design	4	1	4
120023	Management Science	3	1	3
121219	Data Warehousing and Data Mining	4	1	4
121220	Web Application Development	4	1	4
121217	Automata and Compiler Design	4	1	4
121216	Advanced English Communication Skills Lab	-	3	2
121221	Web Application Development Lab	-	3	2
121218	CN and OOAD Lab	-	3	2
	Total	**19**	**14**	**25**

B. Tech - Information Technology
Course Structure of G12

IV YEAR I SEMESTER

Code	Subject	L	T/P/C	C
120549	Software Testing Methodologies	3	1	3
121229	Network Security	4	1	4
121226	Mobile Application Development	4	1	4
120546	Network Programming	4	1	4
	Elective –I			
120543	Information Retrieval Systems			
121222	Artificial Intelligence			
120432	Embedded Systems			
121231	Semantic Web and Social Networks	3	1	3
	Elective – II			
121223	Distributed Systems			
121729	VLSI Design			
121230	Scripting Languages			
121224	Human Computer Interaction	3	1	3
121227	Mobile Application Development Lab	-	3	2
121228	Network Programming Lab	-	3	2
121225	MINI-PROJECT	-	-	2
	Total	**21**	**12**	**27**

IV YEAR II SEMESTER

Code	Subject	L	T/P/D	C
121241	Wireless Networks and Mobile Computing	3	1	3
	Elective – III			
121236	Design Patterns			
121237	Intellectual Property Rights and Cyber Law			
121232	Adhoc & Sensor Networks			
121235	Computer Forensics	3	1	3
	Elective – IV			
121233	Cloud Computing			
120553	E-Commerce			
121240	Service Oriented Architecture			
120564	Storage Area Networks	3	1	3
121238	Main Project	-	15	10
121234	Comprehensive Viva	-	-	2
121239	Seminars	-	6	2
	Total	**9**	**24**	**23**

MATHEMATICS – I

I Year - I Sem.

	L	T/P/D	C
	4	1/-/-	4

Objective : The objective of this course is to understand the concepts of calculus of single and several variables.

UNIT – I: Sequences and Series

Basic definitions of Sequences and Series – Convergences and Divergence – Ratio test – Comparison test – Integral test – Cauchy's Root test – Raabe's test – Absolute and Conditional Convergence.

Mean Value Theorems: Rolle's Theorem – Lagrange's Mean Value Theorem – Cauchy's Mean Value Theorem – Generalized Mean Value theorem. (All theorems without proof)

UNIT – II: Functions of Several Variables

Functions of Several Variables: Functional Dependence - Jacobian- Maxima and Minima of functions of two variables with constraints and without constraints.

Radius of Curvature - Centre and Circle of Curvature – Evolutes and Involutes- Envelopes. (All concepts in Cartesian Coordinates)

UNIT – III: Differential Equations of First Order and First Degree & Applications

Overview of Differential Equations - Exact, Linear and Bernoulli - Applications to Newton's Law of cooling, Law of Natural Growth and Decay - Orthogonal Trajectories.

UNIT – IV: Vector Calculus

Vector Calculus: Gradient – Divergence - Curl and Related Properties – Directional Derivatives & Angle between the Surfaces - Gradient, Divergence, and Curl in Cylindrical and Spherical Coordinate systems.

UNIT – V: Multiple Integrals and Vector Integral Theorems

Multiple integrals: Double and Triple Integrals – Change of Order of Integration- change of variables.

Line integral – Work done – Surface Integral - Flux of a Vector Valued Function.

Vector Integral Theorems: Green's, Stoke's and Gauss's Divergence Theorems (Statement & their Verification).

TEXT BOOKS:

1. Advanced Engineering Mathematics by **Dr. S.R.K. Iyengar & Others**, Narosa, Publications.

2. Advanced Engineering Mathematics by **E.Kreyszig**, Wiley Publications.

3. Higher Engineering Mathematics by **B.S.Grewal**, Khanna Publications.

REFERENCES:

1. Engineering Mathematics – I by T.K. V. Iyengar, B. Krishna Gandhi & Others, S. Chand Publications.

2. A Text Book of Engineering Mathematics – 1 by B.V. Ramana, Tata MCGraw Hill Publications.

3. Engineering Mathematics- I by Dr. Shahnaz Bathul, PHI learning Pvt. Ltd. (In Press)

BASIC ELECTRICAL ENGINEERING

I Year - I Sem.   L   T/P/D   C

                                      4   1/0/0   4

Objective : This course introduces the basic concepts of Electric circuits and machines is the foundation subject . The emphasis in this course is laid on the basic Analysis of circuits which includes single phase circuits, theorems, Alternating quantities and D.C generators Transformers and measuring instruments.

Unit I- Introduction to Electrical circuit Analysis.

Ohm's law, basic circuit components, Kirchhoff's laws. Simple problems. Basic definitions, types of elements, types of sources, resistive networks, inductive networks, capacitive networks, series & parallel circuits, Mesh and nodal analysis. Star delta transformation and delta star transformation. Network theorems- Superposition, Thevenin's, Norton's and Maximum power transfer theorems and simple problems.

Unit II – Alternating Quantities

Principle of AC voltages, wave forms and basic definitions, root mean square and average values of alternating currents and voltage ,form factor and peak factor , phasor representation of alternating quantities , the J operator and phasor algebra, analysis of ac circuits with single basic network element, single phase series circuits.

Unit III -DC Generators and DC Motors

Principle of operation of DC generator, Types of DC Generators, EMF equation in DC Generators.

DC Motors, Principle of operation of DC Motors, Types of DC Motors, losses and torque equation, Losses & efficiency calculation in DC Motors (Elementary treatment only).

Unit IV – Transformers and AC **Machines**

Principle of operation, Constructional details, Ideal and Practical transformer, Losses, Transformer Test, Efficiency & Regulation calculations (all the above topics are only elementary treatment and simple problems) Three phase Induction Motor, Principle of operation, slip, and rotor frequency, torque (Simple Problems) (Elementary treatment only)

Unit V –Basic Instruments

Introduction, classification of instruments, operating principles, essential features of measuring instruments, Moving coil permanent magnet (PMMC) instruments, Moving Iron of Ammeters and Voltmeters (Elementary treatment only)

TEXT BOOKS:

1. Basic Electrical Engineering- by M.S.Naidu and S,Kamakshaiah,2008,TMH

2. Basic Electrical Engineering- by T.K.Nagasarkar and M.S.Sukhija Oxford University Press.

3. Electrical and Electronic Technology- By Hughes –Pearson Education.

REFERENCE BOOKS:

1. Theory and Problems of Basic Electrical Engineering by D.P.Kothari andI.J. Nagrath PHI.

2. Principles of Electrical Engineering by V K Mehta, S.Chand publications

3. Essentials of Electrical and Computer Engineering by David V.Kerns,JR .J.David Irwin Pearson

COMPUTER PROGRAMMING

I Year - I Sem.   **L   T/P/D   C**

                                       4   1/-/-   4

UNIT - I

INTRODUCTION TO COMPUTERS: Introduction to computers, computer systems, computing environments, computer languages, creating and running programs, software development method, algorithms, pseudo code, flow charts, applying the software development method.

INTRODUCTION TO C LANGUAGE: Basic structures of C language, C tokens, data types and sizes, declaration of variables, assigning values.

OPERATORS AND EXPRESSIONS: Statements, arithmetic, relational and logical operators, increment and decrement operators, conditional operator, bitwise operators, type conversions, expressions and evaluation, input and output statements, Header files, C preprocessor, Programming examples. .

UNIT - II

CONTROL STATEMENTS: Conditional and control statements, programming examples..

FUNCTIONS: Defining and accessing, parameter passing, function prototypes, user defined functions, recursive functions , programming examples.

Storage Classes, Scope rules, programming example.

ARRAYS: Defining and processing, one dimensional and two dimensional arrays, initialization, passing arrays to a function, multi dimensional arrays, command line arguments.

UNIT - III

STRINGS: Defining and operations on strings, string variables declaration, reading, writing.

Passing strings as parameters , string handling functions.

POINTERS: Basic Concepts, pointer to pointer, passing pointers to a function, operations on pointers, pointer

arithmetic, pointers and arrays, arrays of pointers, function pointers, dynamic memory allocation.

UNIT - IV

STRUCTURES AND UNIONS: Structure definition, initializing, assigning values, passing of structures as arguments, arrays of structures, pointers to structures, self reference to structures, unions, typedef ,enumerated, bit fields, programming examples.

UNIT - V

CONSOLE AND FILE I/O: File, types of files, file vs. console, file structure, file attributes, file operations, standard I/O, formatted I/O, programming examples.

TEXT BOOKS:

1. B. A. Fouruzan and R. F. Gilberg (2006), Computer Science: A structured programming approach using C, 3rd Edition, Thomson Publications, New Delhi.

2. Yashawanth Kanethkar (2008), Let us C, 8th Edition, Jones & Bartlett Publishers, India.

REFERENCE BOOKS:

1. Herbert Schildt (2000), C: The Complete Reference, 4th Edition, New Delhi, Osborne Mc Graw Hill.

2. B. W. Kerninghan and Dennis M. Ritche (1988), The C Programming Language, 2nd Edition, Prentice Hall

3. Software Series, India.

4. Stephen G.Kochan (2004), Programming in C, 3rd Edition, Pearson Education Private Limited.

MATHEMATICS – II

I Year - I Sem.   L   T/P/D   C

                                                       4   1/-/-   4

Objective : The prime objective of this course is to solve linear and nonlinear systems by using the concepts in Matrices and numerical methods.

UNIT – I: Solution for Linear Systems

Real matrices: Symmetric, Skew-Symmetric and Orthogonal - Complex matrices: Hermitian, Skew-Hermitian and Unitary - Elementary Row Transformations – Rank - Echelon form - Normal form - Solutions of Linear Systems: By Rank Concept, LU Decomposition, and Solution of Tridiagonal Systems.

UNIT – II: Linear Transformations

Eigen values, Eigen vectors – Properties – Cayley-Hamilton Theorem (without proof) - Inverse and Powers of a Matrix by Cayley-Hamilton theorem – Diagonolization of matrix - Calculation of Powers of matrix – Modal and Spectral Matrices.

Quadratic forms: Reduction of Quadratic form to Canonical form - Linear Transformation – Orthogonal Transformation – Rank, Index, and Signature – Sylvester's Law of Inertia (without proof).

UNIT – III: Solution of Non- linear Systems & Curve Fitting

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

Curve fitting: Fitting a Straight line – Second Degree Curve- Exponentional curve - Power Curve by the Method of Least Squares.

UNIT – IV: Interpolation

Introduction - Errors in Polynomial Interpolation – Finite Differences- Forward Differences - Backward Differences – Central Differences – Symbolic Relations and Separation of Symbols - Difference Equations - Differences of a Polynomial - Newton's Formulae for Interpolation – Central Difference Interpolation Formulae: Gauss Central Difference Formulae – Interpolation with Unevenly Spaced Points: Lagrange's Interpolation formula, Newton's Divided Difference Interpolation Formula

UNIT – V: Numerical solution of IVP's in ODE

Numerical Differentiation – Numerical Integration: Simpson's 3/8 Rule, Gaussian Integration.

Numerical Solution of Ordinary Differential equations: Taylor's series Method-Picard's Method of Successive Approximations – Euler's Method,

Modified Euler's Method - Runge-Kutta Method – Predictor-Corrector Methods: Adams-Bashforth-Moulton (ABM) Method.

TEXT BOOKS:

1. Advanced Engineering Mathematics by **Dr. S.R.K. Iyengar & Others**, Narosa, Publications.

2. Advanced Engineering Mathematics by **Kreyszig**, Wiley Publications.

3. Higher Engineering Mathematics by **B.S. Grewal**, Khanna Publications.

REFERENCES:

1. Introductory Methods by Numerical Analysis by S.S.Sastry, PHI Learning Pvt. Ltd.

2. Mathematical Methods by B.V.Ramana, Tata McGraw Hill Publications.

3. Mathematical Methods by Dr.Shahnaz Bathul, PHI Learning Pvt, Ltd (in press)

ENGINEERING CHEMISTRY

I Year - I Sem.   **L   T/P/D   C**

                                                           4   -/-/-   4

Objectives:

1. To furnish the conceptual understanding of the basic principles of chemistry.

2. To develop the habit of scientific reasoning in students so that they can work with open and inquiring mind.

3. To impart extensive knowledge of the subject to make them understand the role of chemistry in the field of Engineering.

4. To develop analytical capabilities of chemistry so that they can apply knowledge gained in solving engineering related problems.

Unit-I:

Electro Chemistry and Corrosion: Conductance-Specific conductance, Equivalent conductance, Molar conductance, Effect of dilution on conductance, measurement of electrolytic conductance. Galvanic cell, cell notation, concept of electrode potential, Nernst equation and its applications. Types of Electrodes-Hydrogen, Calomel electrodes. Single electrode potential, Measurement of cell EMF and its applications. Galvanic series and Electrochemical series and its significance. Determination of P^H by using Quinhydrone and Glass electrodes. Concentration cells- Electrolytic concentration cell & its applications, numerical problems.

Introduction to Corrosion, causes and effects of corrosion. Theories of corrosion- Chemical and Electrochemical corrosion with mechanism.Types of corrosion-Galvanic,Waterline & Granular corrosion. Factors affecting rate of corrosion (i)Nature of metal – galvanic series & nature of corrosion product (ii) Nature of environment – effect of temperature, P^H, Humidity.Corrosion control methods – Cathodic protection- Sacrificial anode & Impressed current cathodic methods, Metallic coatings- Hot dipping- Galvanisation,Tinning, Metal Cladding & Cementation.   **(16 hrs)**

Unit-II:

WaterTechnology: Introduction, Hardness- Causes, units & types of hardness. Estimation of temporary & permanent hardness of water by EDTA method, numerical problems. Boiler Troubles- Scales& Sludge formation, Priming & Foaming, Caustic embrittlement,, Boiler Corrosion .Softening of water -Internal treatment & External treatment – Lime soda process, Zeolites, Ion exchange process,numerical problems. Specifications & Treatment of potable water.   **(12hrs)**

Unit-III:

Polymers: Introduction , Types of polymerization, Mechanism (Chain growth- Free radical mechanism & step growth). Plastics-Thermoplastic resins & Thermoset resins, Compounding & Fabrication of plastics. Preparation, properties and engineering applications of PVC, Teflon, Bakelite & Nylon. Conducting polymers: conduction and its applications of Polyacetylene, Polyaniline. Rubber: Natural rubber- Processing & Vulcanization . Elastomers-Buna-S & Thiokol rubber. Bio degradable polymers-example and uses, Fibers- Polyester and Polyacrylonitile and their applications.   **(10 hrs)**

Unit-IV

Energy Sources: Introduction**,** Chemical Fuels-classification, solid fuels-coal,analysis of coal– proximate and ultimate analysis. Liquid fuels-petroleum, refining of petroleum. Cracking-Thermal & Catalytic cracking , Synthetic petrol-Bergius & Fischer Tropsech's process, Knocking- Octane & Cetane number. Gaseous fuels – Natural gas, Calorific value of fuel-HCV, LCV, Dulong formula. Determination of calorific value by Junker's calorimeter, Combustion problems. Analysis of flue gas by Orsat's method. **(13 hrs)**

Unit-V

Material Chemistry: Introduction , Cement: Composition of Portland cement , Setting and Hardening of cement (reactions). Lubricants-mechanism of lubrication, Properties of lubricants- Viscosity & its determination by Red wood viscometer, Flash and Fire point& its determination by Pensky-Marten's apparatus, Cloud point & pour point. Refractories- Introduction , Classification & properties-refractoriness & RUL test, Ceramics-Porcelain.

Batteries: Primary cells: zinc-carbon , Secondary cells: Lead-acid storage cell & Ni-Cd cell. Fuel cell: Hydrogen – Oxygen fuel cell .   **(9 hrs)**

TEXT BOOKS:

1. A text book of Engineering Chemistry – Dr. Y. Bharathi Kumari & Dr.Ch. Jyotsna Cherukuri.

2. Engineering chemistry by P.C.Jain &Mounica Jain,Dhanpatrai publishing company(2008).

3. Text book of Engineering chemistry- Shashi chawla,Dhanpatrai publishing company,NewDelhi(2008)

REFERENCE BOOKS:

1. Text book of Engineering chemistry by C.P.Murthy,C.V.Agarawal,A.Naidu B.S.Publications,Hyd(2006).

2. Text of Engineering chemistry by S.S.Dara and Mukkanti,S.Chand and Co,New Delhi(2006)

3. Engineering chemistry by B.Shivashankar,Mc.Graw Hill publishing company limited, NewDelhi(2006).

4. Engineering chemistry J.C.Kuriacase & J.Rajaram,TataMcGrawHills co.,NewDelhi(2004)

5. Chemistry of Engineering materials by R.P.Mani and K.N.Mishra,CENGAGE learning.

6. Applied chemistry-a text for Engineering and technology-Springar(2005)

7. Engineering chemistry –R.Gopalan, D.Venkatappayya, D.V.Sulochana Nagarajan-Vikas publishers(2008).

8. Elements of Physical chemistry by B.R.Puri,L.R .Sharma and M.S.Pathania-2nd edition,vishal publishing co.

COMPUTER PROGRAMMING LAB

I Year - I Sem.   **L   T/P/D   C**

                                                         0   -/3/-   2

Recommended Systems/Software Requirements:

Intel based desktop PC 'gcc' Compiler for CSE and IT branches, 'ANSI C' Complier for other branches.

Week I.

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

Sum=1-x2/2! +x4/4!-x6/6!+x8/8!-x10/10!

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

Week 2.

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.

Week 3

a) The total distance travelled by vehicle in 't' seconds is given by distance = ut+1/2at2 where 'u' and 'a' are the initial velocity (m/sec.) and acceleration (m/sec2). Write C program to find the distance travelled at regular intervals of time given the values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of 'u' and 'a'.

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

Week 4

a) Write a C program to generate Pascal's triangle.

b) Write a C program to construct a pyramid of numbers.

Week 5

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

1+x+x2+x3+………….+xn

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 print an error message if n<0, then go back and read in the next pair of numbers of without computing the sum. Are any values of x also illegal ? If so, test for them too.

Week 6

Write a C program to implement:

    i)   Precedence and associativity

    ii)   Bit Manipulation using switch case

Week 7

Write 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.

    iii) To solve Towers of Hanoi problem. (Recursion)

Week 8

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

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

    i)   Addition & Multiplication of 2 matrices

    ii)   Determinant of matrix and inverse of a matrix

Week 9

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

    i)   To insert a sub-string in to given main string from a given position.

    ii)   To delete n Characters from a given position in a given string.

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

Week 10

    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.

Week 11

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

i) Reading a complex number

ii) Writing a complex number ii) To find the GCD (greatest common divisor) of two given integers.

iii) Addition of two complex numbers

iv) Multiplication of two complex numbers

(Note: represent complex number using a structure.)

Week 12

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 Addition of two complex numbers

iv) Multiplication of two complex numbers

(Note: represent complex number using a structure.)

Week 12

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.)

BASIC COMPUTER ENGINEERING LAB

I Year - I Sem.   **L   T/P/D   C**

                                        0   0/3/0   2

List of experiments

1) Verification of KCL and KVL.

2) Verification of Superposition theorem.

3) Verification of Reciprocity theorem.

4) Verification of maximum power transfer theorem.

5) Verification of of Thevenin's theorem.

6) Magnetization characteristics of D.C. Shunt generator.

7) Swinburne's Test on DC shunt machine (Predetermination of efficiency of a given DC Shunt machine working as motor and generator).

8) Brake test on DC shunt motor. Determination of performance Characteristics.

9) OC & SC tests on Single-phase transformer (Predetermination of efficiency and regulation at given power factors).

10) Brake test on 3-phase Induction motor (performance characteristics).

ENGINEERING CHEMISTRY LAB

I Year - I Sem.   **L   T/P/D   C**

                                                                        0   0/-3/0   2

List of Experiments

Any 10 Experiments of the Following:

1. Estimation of Ferrous ion by dichrometry by using Mohr's salt

2. Estimation of hardness of water by EDTA method

3. Estimation of manganese dioxide in pyrolusite

4. Determination of surface tension of lubricants

5. Titration of strong acid VS strong base by conductometric method

6. Titration of strong acid VS strong base by potentiometric method

7. Estimation of Copper by Colorimetric method

8. Estimation of Iron in Cement by Colorimetric method

9. Conductometric titration of mixture of acids Vs strong base

10. Determination of viscosity of sample oil by Ostwald's viscometer

11. Determination of dissociation constant of weak acid by Conductometric method.

12. Preparation of Thiokol rubber

TEXT BOOKS:

1. Laboratory Manual of Engineering Chemistry by Dr. Y. Bharathi Kumari & Ch. Jyotsna V.G.S Book links.

2. Practical Engineering Chemistry by K.Mukkanti, etal, B.S. Publications, Hyderabad

3. Inorganic quantitative analysis, Vogel

REFERENCE BOOKS:

1. Text Book of Engineering chemistry by R.N. Goyal and Harrmendra Goel

2. A text book on experiments and calculation Engg. S.S. Dara

3. Instrumental methods of chemical analysis, Chatwal, Anand, Himalaya Publications

MATHEMATICS - III

I Year - I Sem.

	L	T/P/D	C
	4	3/-/-	4

Objective : The core objective of this paper is to solve the differential equations by using analytical methods and integral transform methods.

UNIT – I: Linear Differential Equations with Constant Coefficients & Applications

Linear differential equations with constant coefficients - Method of Variation of Parameters.

Applications in Electrical Circuits, Simple Harmonic Motion.

UNIT – II: Laplace Transforms & Its Applications to Ordinary Differential Equations

Laplace Transform of Standard Functions - First and Second Shifting Theorems - Transform of Derivatives and Integrals – Multiplication and Division by 't' - Laplace Transform of a Periodic Function - Unit Step Function - Dirac's Delta Function – Inverse Laplace Transform – Method of Partial Fractions - Convolution Theorem - Application of Laplace Transforms to Ordinary Differential Equations.

UNIT – III: Fourier Series & Fourier Transforms

Fourier Series: Determination of Fourier Coefficients – Fourier Series – Even and Odd Functions – Fourier Series in an Arbitrary Interval – Even and Odd Periodic Continuation – Half-Range Fourier Sine and Cosine Expansions.

Fourier Transforms: Fourier Sine and Cosine Transforms – Properties – Inverse Transforms – Convolution Theorem – Parseval's Identity.

UNIT – IV: Partial Differential Equations

Introduction - Formation of Partial Differential Equation: By Elimination of Arbitrary Constants and Arbitrary Functions - Solution of First Order Equations: Linear (Lagrange's) Equations - Nonlinear (Standard type) Equations and Charpit's Method

Second Order Partial Differential Equations: Method of Separation of Variables – One Dimensional Wave Equation – One Dimensional Heat Equation - Laplace Equation in Two Variables - Transmission Lines.

UNIT – V: Applications of Laplace and Fourier Transforms in IVPs & BVPs

Applications of Laplace Transforms in IVPs and BVPs: Heat Equation - Wave Equation – Laplace Equation.

Applications of Fourier Transforms in IVPs and BVPs: Infinite Fourier Transforms – Choice of Infinite Sine or Cosine Transforms Examples.

TEXT BOOKS:

1. Advanced Engineering Mathematics by **Dr. S.R.K. Iyengar & Others**, Narosa, Publications.
2. Advanced Engineering Mathematics by **Kreyszig**, Wiley Publications.
3. Higher Engineering Mathematics by **B.S. Grewal**, Khanna Publications.

REFERENCES:

1. Mathematical Methods by B. V. Ramana, Tata McGraw Hill Publications.
2. Integral Transforms by I.N. Sneddon, TATA McGraw Hill Edition.
3. Mathematical Methods by Dr.Shahnaz Bathul, PHI Learning Pvt, Ltd (in press).

ENGINEERING DRAWING

I Year - II Sem.   **L**   **T/P/D**   **C**

                                           2   **-/-/4**   **3**

CHAPTER 1 . Principles of Engineering Graphics and their Significance-Drawing Instrument and their Use- Conventions in Drawing-Lettering-Curves used in engineering Practice and Constructions. Conic sections-Ellipse, Parabola and Hyperbola. Construction of Cycloid, Epi-cycloid and Hypocycloid.

CHAPTER 2. Principle of orthographic projections –Conventions-First angle and Third angle projections, Projections of Points and Lines. (Excluding traces of a line)

CHAPTER 3. Projections of regular planes inclined to both the planes.

CHAPTER 4. Projections of regular Solids inclined to both the planes.

CHAPTER 5. Principles of Isometric Projection- Isometric Scale-Isometric Views- Conventions- Isometric Views of Lines, Plane Figures, Simple and compound Solids. Conversion of Isometric Views to Orthographic Views.

Text Book : Engineering Drawing by N.D.Bhatt

ENGINEERING PHYSICS

I Year - II Sem.   L   T/P/D   C

                                             4   1/-/-   4

Objectives: This course imparts students, the basic knowledge of the electromagnetic properties, and optical properties which form the requirement for understanding and applying principles of physics for electronic, electrical and communicational engineering. This also enhances the classical to Quantum mechanical

UNIT-I

1. **Solids and Crystallography:** Classification of bonding in solids. Calculation of Cohesive Energy.   (2 Periods)

   Space Lattice, Unit Cell, Lattice Parameters, Crystal Systems, Miller Indices, Crystal Planes and Directions, Inter Planar Spacing of Orthogonal Crystal Systems, Atomic Radius, Co-ordination Number and Packing Factor of SC, BCC, FCC. X-ray diffraction by powder method. (4 Periods)

2. **Defects in Crystals**: Point Defects: Vacancies, Substitution, Interstitial, Frenkel and Schottky Defects; Equilibrium concentration of point defects (vacancies, Frenkel and Schottky defects.)   (4 Periods)

UNIT-II

3. **Elements of Statistical Mechanics**: Distinguishable and indistinguishable paticles. Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac Statistics (Qualitative Treatment), Fermi-Dirac Distribution function and its variation with temperature. Planck's Law of Black Body Radiation and derivation of Wien's Law, Rayleigh-Jeans law from Planck's law.   (5 Periods)

4. Principles of Quantum Mechanics: Waves and Particles, de Broglie Hypothesis , Matter Waves, Davisson and Germer Experiment , Heisenberg's Uncertatinty Principle (Qualitative Treatment), Schrodinger's Time Independent Wave Equation - Physical Significance of the Wave Function. Particle in One Dimensional Potential Box.   (5 Periods)

UNIT-III

5. **Band Theory of Solids**: Behavior of Electron in a periodic Potential using Bloch solution. Kronig-Penny Model (Qualitative Treatment), Origin of Energy Bands in Solids, Classification of Materials into Conductors, Semi Conductors & Insulators, Concept of Effective Mass of an Electron.   (5 Periods)

6. **Semiconductor Physics**: Fermi Levels in Intrinsic and Extrinsic Semiconductors, Carrier Concentration in Intrinsic and Extrinsic Semiconductors. Drift and diffusion current in semiconductors (Qualitative Treatment) and Equation of Continuity, Direct & Indirect Band Gap Semiconductors, Hall Effect and its applications. (7 Periods)

UNIT-IV

7. **Dielectric Properties**: Definition of Electric Dipole, Dipole Moment, Dielectric Constant, Polarizability, Electric Susceptibility, Displacement Vector. Electronic, Ionic and Orientation Polarizations and Calculation of Polarizabilities for Electronic and Ionic poarisations. Internal Field in solids , Clausius - Mossotti Equation, Piezo-electricity and Ferro- electricity, examples and applications. (7 Periods)

8. **Magnetic Properties**: Definition of Permeability, Field Intensity, Magnetic Field Induction, Magnetization, Magnetic Susceptibility, Origin of Magnetic Moment, Bohr Magneton, Domain Theory of Ferro Magnetism, Hysteresis Curve, Soft and Hard Magnetic Materials, Properties of Anti-Ferro and Ferri Magnetic Materials, Ferrites and their Applications.Perfect diamagnetism in super condectors(Meissner effect), Magnetic Levitation (8 Periods)

UNIT-V

9. **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 (LASER Cooling & ablation). (6 Periods)

10. **Fiber Optics**: Principle of Optical Fiber, Acceptance Angle and Acceptance Cone, Numerical Aperture, Types of Optical Fibers (Step index and graded index fibers) and Refractive Index Profiles, Attenuation in Optical Fibers, Application of Optical Fibers (Engineering, Medical and Scientific fields). (3 Periods)

11. **Nanotechnology**: Origin of Nanotechnology, Nano Scale, Surface to Volume Ratio, Quantum Confinement, Bottom-up Fabrication: Sol-gel, Top-down Fabrication: Chemical Vapour Deposition, Characterization (XRD&TEM) and Applications. (4 Periods)

TEXT BOOKS:

1. Applied Physics - P.K.Palanisamy (SciTech Publications (India) Pvt. Ltd., Fifth Print 2008).

2. Applied Physics - S.O. Pillai & Sivakami (New Age International (P) Ltd., Second Edition   2008).

3. Applied Physics - T. Bhima Shankaram & G. Prasad (B.S. Publications, Third Edition 2008).

4. Concepts of Modern Physics –Aurther Beiser . et.al.

REFERENCES:

1. Solid State Physics - M. Armugam (Anuradha Publications).

2. Modern Physics - R. Murugeshan & K. Siva Prasath - S. Chand & Co. (for Statistical Mechanics).

3. Physics and Chemistry of Materials-Gersten, FW Smirth

4 . Material Science and Engineerin -Raghavan

5. Nanotechnology - M.Ratner & D. Ratner (Pearson Ed.).

6. Introduction to Solid State Physics - C. Kittel (Wiley Eastern).

ENGLISH

I Year - II Sem.   **L**   **T/P/D**   **C**

                                  4   **/-/-**   **4**

Objectives

a. To improve the language proficiency of the students in English with emphasis on LSRW skills.

b. To equip the students to cope the academic subjects with greater facility through the theoretical and practical components of the English syllabi.

c. To develop the study skills and communication skills in formal and informal situations.

Syllabus

Unit – I

1. Chapter entitled *Heaven's Gate* from "Enjoying Everyday English", Published by Sangam Books, Hyderabad.

2. Chapters 1-6 from Wings of Fire: An Autobiography, APJ. Abdul Kalam with Arun Tiwari, University Press.

3. Grammar : Nouns, Pronouns, Articles, Prepositions and Conjunctions

4. Vocabulary : Usage of Dictionary – *to identify meaning, pronunciation and usage of a word.*

5. Writing : Paragraphs and Descriptions

Unit – II

1. Chapter entitled *The Connoisseur* from "Enjoying Everyday English", Published by Sangam Books, Hyderabad.

2. Chapters 7-12 from Wings of Fire: An Autobiography, APJ. Abdul Kalam with Arun Tiwari, University Press.

3. Grammar : Adjectives and Adverbials

4. Vocabulary : Words often confused – *Homophones, Homonyms and Homographs*

5. Writing : Summarising and Note-making

Unit – III

1. Chapter entitled *The Cuddalore Experience* from "Enjoying Everyday English", Published by Sangam Books, Hyderabad.

2. Chapters 13 - 18 from Wings of Fire: An Autobiography, APJ. Abdul Kalam with Arun Tiwari, University Press.

3. Grammar : Tenses and Concord

4. Vocabulary : Word Formation and Word Origins - *Prefixes and Suffixes.*

5. Writing : Official correspondence – *Memorandums, reports, letters*

and e-mails

Unit – IV

1. Chapter entitled *Odds Against Us* from "Enjoying Everyday English", Published by Sangam Books, Hyderabad.

2. Chapters 19 - 24 from Wings of Fire: An Autobiography, APJ. Abdul Kalam with Arun Tiwari, University Press.

3. Grammar : Interrogative Sentences and Question Tags

4. Vocabulary : One word substitutes and analogies

5. Writing : Covering letter and Resume writing

Unit – V

Engineering Ethics, Values and Professionalism – *Senses of Engineering Ethics, Variety of Moral issues, Professions and Professionalism, Assessment of Safety and Risk, Collegiality and Loyalty, Respect for Authority, Professional Rights, Computer ethics, Moral leadership, Corporate Code of Conduct.*

Text Books/Books Prescribed

1. "Enjoying Everyday English", Published by Sangam Books, Hyderabad.

2. "Wings of Fire : An Autobiography" APJ. Abdul Kalam with Arun Tiwari, University Press.

3. "Learn Correct English: A Book of Grammar, Usage and Composition" by Shiv K.Kumar and Hemalatha Nagarajan, Published by Pearson.

For General Reading

The Diary of a Young Girl by *Anne Frank*

Short stories by *O'Henry*

Swami and his Friends by *R.K.Narayan*

How I taught my grand mother to read by *Sudha Murthy*

Brave New World by *H.G.Wells*

REFERENCES :

1. **Objective English**, Edgar Thorpe & Showick Thorpe, Pearson Education.

2. **Murphy's English Grammar** with CD, Murphy, Cambridge University Press.

3. **ABC of Common Errors**, Nigel D Turton, Mac Millan Publishers.

4. **Engineering Ethics** (Second Edition) Charles B.Fleddermann, Pearson Education.

5. **Professional Ethics**, Jayshree Suresh & B.S.Raghavan, S.Chand & Company Ltd.

DATA STRUCTURES

I Year - II Sem.

L	T/P/D	C
4	1/-/-	4

UNIT I:

Searching: Linear and binary search methods.

Sorting: Bubble sort, selection sort, Insertion sort, Quick sort, Merge sort, Heap sort, Shell sort, Radix sort. Time complexities.

UNIT II:

Stacks, Queues, Circular queues, Dequeues working and representation using arrays, Applications of stacks :infix to post fix conversion, postfix expression evaluation.

UNIT III:

Linked list: Singly linked list, Doubly linked list, Circular linked list working and representation using pointers. Implementation of stacks and queues using pointers.

UNIT IV:

Trees: Terminology, sequential and linked representation, tree traversals. Binary trees, Binary search trees.

UNIT V:

Graphs: Terminology, sequential and linked representation, graph traversals : Depth First Search & Breadth First Search implementation. Spanning trees, Prims and Kruskals method.

TEXT BOOKS:

1. Computer science, A structured programming approach using C, B.A. Forouzan and R.F.   Gilberg, Third edition, Thomson.

2. Data Structures Using C – A.S.Tanenbaum, Y. Langsam, and M.J. Augenstein, PHI/Pearson education.

REFERENCES :

1. C Programming & Data structures – E. Balaguru Swami, TMH

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

3. C Programming with problem solving, J.A. Jones & K. Harrow, dreamtech Press

4. Let us C – Yeswanth Kanithkar.

ENGINEERING PHYSICS LAB

I Year - II Sem.   **L   T/P/D   C**
                                                         0   -/3/-   2

List of the Experiments

1. Dispersive power of the material of a Prism – Spectrometer.

2. Determination of wavelength of a source – Diffraction Grating (Normal -Incidence).

3. Size of the particle and Quantum Confinement.

4. Time constant of R-C Circuit.

5. Magnetic field along the axis of the current carrying coil- Stewart &Gees'

6. Evaluation of Numerical Aperture

7. Evaluation   Bending losses of fibers.

8. Energy gap of a Semiconductor material .

9. Torsional pendulum

10. Laser wavelength determination using Diffraction grating.

11. Dielectric constant.

12. Hall effect –simulation.

TEXT BOOKS:

1. Practical Enginieering Physics by T.Radha Krishna & V. Rajeshwar Rao (VGS Techno Series)

2. Laboratry Manual of Engineering Physics by Dr. Y. Aaprna & Dr. K. Venkateswara RAO (SM Enterprises.)

REFERENCE BOOKS:

1 . Experiments in Engineerin Physics by MN Avadhanlu, AA Dani, PM Polkey - S.C HAND

ENGLISH LAB

I Year - II Sem.   **L   T/P/D   C**

                                                         0   -/3/-   2

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

Objectives:

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

    b. To enable them to learn better pronunciation through stress on word accent, intonation, and rhythm.

    c. To train them to use language effectively to face interviews, group discussions, public speaking.

    d. To initiate them into greater use of the computer in resume preparation, report writing, format-making etc.

Syllabus:

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

1. Introduction to the Sounds of English- *Vowels, Diphthongs & Consonants*

2. Introduction to Accent and Rhythm – *Stress and Intonation*

3. Pronouncing words: *Important patterns*

4. Situational Dialogues / Role Play

5. Presentation Skills

6. 'Just A Minute' Sessions (JAM)

7. Descriptions and Narrations

8. Information Transfer

9. Debating Skills

10. Telephonic conversations

11. Group Discussions

12. Interview Skills

Minimum Requirement:

The English Language Lab shall have two parts:

    i) **The Computer aided Language Lab** for 30 students with 30 systems, one master console, LAN facility and English language software for self- study by learners.

    ii) **The Communication Skills Lab** with movable chairs and audio-visual aids with a P.A System, a Multimedia Projector a digital stereo – audio & video system and camcorder etc.

System Requirement (Hardware component):

Computer network with Lan with minimum 30 multimedia systems with the following specifications:

    i) CPU Requirements

    a) Duel Core Processor

    b) Speed – 2.8 GHZ

    c) RAM – 1 GB Minimum

    d) Hard Disk – 80 GB Minimum

    e) DVD ROM Drive

    ii) Headphones of High quality

Suggested Software:

- Cambridge Advanced Learners' English Dictionary with CD.
- Murphy's English Grammar with CD, Cambridge University, Press.
- Pronunciation in Use by *Mark Hancock,* Cambridge University Press.
- Test Your English Vocabulary in Use by Michael Mc Carthy and Felicity O'Dell, Cambridge University Press.
- BBC Speak English

References:

1. **A Practical Course in English Pronunciation**, (with two Audio cassettes) by J. Sethi, Kamlesh Sadanand & D.V. Jindal, Prentice-Hall of India Pvt. Ltd., New Delhi.

2. **A text book of English Phonetics for Indian Students** by T.Balasubramanian (Macmillan).

3. **Speak Well** Published by **Orient Blackswan Private Limited,** 2012.

DISTRIBUTION AND WEIGHTAGE OF MARKS

English Language Laboratory Practical Paper:

1. The practical examinations for the English Language Laboratory shall be conducted as per the norms stipulated for the core engineering practical sessions.

2. For the Language lab sessions, there shall be a continuous evaluation during the semester for 25 sessional marks and 50 year-end Examination marks. Of the 25 marks, 15 marks shall be awarded for day-to-day work and 10 marks to be awarded by conducting Internal Lab Test(s). The year- end Examination shall be conducted by the teacher concerned with an external examiner from the other Universities or colleges.

DATA STRUCTURES LAB

I Year - II Sem.	L	T/P/D	C
	0	-/3/-	2

Week 1

Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:

i) Linear search ii) Binary search

Week 2

Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:

i) Bubble sort ii) Selection sort

Week 3

Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:

i) Insertion sort ii) Quick Sort

Week 4

Write C programs that implement stack (its operations) using

i) Arrays ii) Pointers

Week 5

Write C programs that implement Queue (its operations) using

i) Arrays ii) Pointers

Week6

Write a program to convert the given infix expression to post-fix expression.

Week7

Write a program to evaluate a post-fix expression.

Week8

Write C programs to implement the following using arrays

i) Circular queue ii) Dequeue

Week 9

Write a C program that uses functions to perform the following operations on singly linked list:

i) Creation ii) Insertion iii) Deletion iv) Traversal

Week 10

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

on doubly linked list.:

i) Creation ii) Insertion iii) Deletion iv) Traversal in both ways

Week11

Write a C program that uses functions to perform the following operations on circular linked list:

i) Creation ii) Insertion iii) Deletion iv) Traversal

Week 12

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

i) Creating a Binary Tree of integers

ii) Traversing the above binary tree in preorder, in order and post order.

TEXT BOOKS

1. Computer science, A structured programming approach using C, B.A. Forouzan and R.F. Gilberg, Third edition, Thomson.

2. Programming in C, P.Dey & M. Ghosh, Oxford Univ.Press.

3. C and Data Structures, E Balaguruswamy, TMH publications.

MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE
(COMMON TO CSE & IT)

II Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                          3   1/-/-   3

Objectives:

- ➢ This course is to present the foundations of many basic computer related concepts.
- ➢ It provides coherent development to the students for the courses like Fundamentals of Computer Organization, RDBMS, Data Structures, Analysis of Algorithms, Cryptography, Artificial Intelligence and other's.
- ➢ This course will enhance the student's ability to think logically and mathematically.

Outcomes:

- ➢ Formulate mathematical proofs using logic, apply mathematical tools such as induction and recursion.
- ➢ Formulate combinatorial arguments and Distinguish between various computational models.
- ➢ Recall key definitions from set theory.
- ➢ Think critically on the difficulties of key questions in foundations of computer science.
- ➢ Understand most of the fundamental terminology employed in higher courses in computer science as plausible.

UNIT I

Mathematical Logic:

Statements and notations, Connectives, Well formed formulas, Truth Tables, Tautology, Equivalence implication, Normal forms, Quantifiers, Universal Quantifiers.

Predicates:

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

UNIT II

Relations:

Properties of binary Relations, equivalence, compatibility and partial ordering relations, Hasse diagram.

Functions: Inverse Function Comports of functions, recursive Functions, Lattice and its Properties.

UNIT III

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

Elementary Combinatorics:

Basis of counting, Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, the principles of Inclusion Exclusion. Pigeon hole principles and its application

UNIT IV:

Recurrence Relation: Generating Functions, Function of Sequences Calculating Coefficient of generating function, Recurrence relations, Solving recurrence relation by substitution and Generating funds. Characteristics roots solution of In 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. Mathematical Foundations of Computer Science (Discrete Structures),- 2nd Edition- Dr. D.S. Chandra Sekharaiah Prism books Pvt.Ltd.

2. Discrete Mathematics for Computer Scientists & Mathematicians, J.L. Mott, A. Kandel, T.P. Baker Prentice Hall.

3. Discrete Mathematical Structures with application to Computer Science, Trembly & Manohar.

References :

1. Discrete and Combinational Mathematics- An Applied Introduction-5th Edition – Ralph. P.Grimaldi.Pearson Education

2. Discrete Mathematics and its Applications, Kenneth H. Rosen, Fifth Edition.TMH.

3. Discrete Mathematical Structures, Bernand Kolman, Roberty C. Busby, Sharn Cutter Ross, Pearson Education/PHI.

ELECTRONIC DEVICES AND CIRCUITS
(Common to ECE, EEE, CSE, ICE, IT, ETM)

II Year B.Tech. - IT I- Sem.	L	T/P/D	C
	3	1/-/-	3

Objectives:

➢ This course aims to give the detailed knowledge of basic devices used in Electronic Circuits and Systems. Mainly emphasizes on construction, working, principle of operation, symbols, equivalent circuits, characteristics, applications of devices like p-n Junction diode, Zener diode, BJT, FET, MOSFET, Tunnel diode, Varactor diode, Schottky Barrier Diode, Semiconductor Photo Diode, Photo Transistor, LED, PIN Diode, UJT, SCR and small signal modeling of BJTs and FETs.

Outcomes:

➢ The completion of the course enables to understand construction, working, symbols, principle of operation, characteristics, modeling and applications of most important electronic devices of Electronic circuits and Systems.

Unit- I: p-n Junction Diode, Rectifiers and Filters

Qualitative Theory of p-n Junction , p-n Junction as a Diode, Diode Equation, Volt-Ampere characteristics, Temperature dependence of V-I characteristics, Ideal versus practical -Resistance levels(Static &Dynamic), Transition and Diffusion Capacitances, Diode Equivalent circuits, Hall effect, Load Line Analysis, Breakdown Mechanism in Semiconductor Diodes, Zener Diode Characteristics.

P-n junction as a Rectifier, Half wave Rectifier, Full Wave Rectifier, Bridge rectifier, Harmonic components in a Rectifier circuit, Inductor Filters, Capacitor Filters, L-Section Filters, "-Section filters, Comparison of Filters, Voltage Regulation using Zener Diode.

Unit- II: Bipolar Junction Transistor, Transistor Biasing and Stabilization

The Junction Transistor, Transistor Current Components, Transistor as an Amplifier, Transistor Construction, BJT Operation, BJT Symbol, Common Base, Common Emitter and Common Collector Configurations, Limits of Operation, BJT Specifications.

Operating Point, The DC and AC Load lines, Need for Biasing, Fixed Bias, Collector Feedback Bias, Emitter Feedback Bias, Collector-Emitter Feedback bias, Voltage Divider Bias, Bias Stability ,Stabilization Factors, Stabilization against variations in VBE and â, Bias Compensation using Diodes and Transistors, Thermal Runaway, Thermal Stability.

Unit- III: Small Signal Low Frequency BJT Models

BJT Hybrid Model, Determination of h-parameters from Transistor Characteristics, Analysis of Transistor Amplifier using h-Parameters, Comparison of CB,CE and CC Amplifier Configurations.

Unit- IV: Field Effect Transistor and FET Amplifiers

The Junction Field Effect Transistor (Construction, principle of operation, symbol), Pinch-off Voltage, Volt-Ampere characteristics, Differences between JFET & MOSFET, MOSFET (Construction, principle of operation, symbol), MOSEFT Characteristics in Enhancement & Depletion modes, differences between EMOSFET & DMOSFET.

FET Biasing (Fixed bias, Self Bias, Voltage Divider Bias & Feedback Bias), JFET Small Signal Model, Analysis of Common Source Amplifier, Common Drain amplifier, Generalized FET amplifier, FET as Voltage Variable Resistor, Comparison of BJT & FET.

Unit- V: Special Purpose Electronic Devices

Principle of Operation and Characteristics of Tunnel Diode (with help of Energy Band Diagram) and Varactor Diode, Principle of Operation of Schottky Barrier Diode, Semiconductor Photo Diode, Photo Transistor, LED, PIN Diode, UJT, SCR.

Text Books

1. Milliman's Electronic Devices and Circuits - J. Milliman, C. C. Halkias and Satyabrata Jit, 2ed,1998, TMH.

2. Electronic Devices and Circuits -R. L. Boylestad and Louis Nashelsky, 9ed, 2006, PEI/PHI.

3. Introduction to Electronic Devices and Circuits –Rober T.Paynter,PE.

References

1. Integrated Electronics - J.Milliman and Christors C.Halkias,1991, ed 2008, TMH

2. Electronic Devices and Circuits-Klal Kishore, 2 ed, 2005, BSP.

3. Electronic Devices and Circuits –Anil K.Maini, Varsha Agrawl,1 ed, 2009, Wiley India Pvt. Ltd

4. Electronic Devices and Circuits - S.Salivahanan, N.Suresh Kumar, A.Vallavaraj, 2 ed., 2008, TMH.

5. Electronic Devices and Circuits- A.P.Godse, U.A.Bakshi, Technical

OPERATING SYSTEMS
(COMMON TO CSE & IT)

II Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                                          4   1/-/-   4

Objectives :
- To get knowledge of OS and the specifications of some OS like WINDOWS and LINUX
- To get knowledge of processes/threads management polices and scheduling polices
- To get knowledge of memory management like paging, segmentation and both together
- To get knowledge of file management and protective schemes
- get knowledge of device management polices and scheduling of devices like discs

Outcomes :
- Student has knowledge of OS and the specifications of some OS like WINDOWS and LINUX
- Student has knowledge of scheduling polices, can select required scheduling for IT products
- Student has knowledge of memory management, can select required policy IT products
- Student has knowledge of file management, can select block size and files (contiguous/scattered)
- Student has knowledge of device management, can select scheduling for discs

UNIT – I:

Operating System Overview: Operating System Objectives and functions – Evaluation of operating System – Example Systems – Modern Unix Systems, Linux Systems.

Process Description – Process States, Process description and Control, Examples Systems.

UNIT - II

Uniprocessor Scheduling: Types of Scheduling – Scheduling algorithms, Examples Systems.

Threads – Processes and Threads, Examples Systems.

I/O management - I/O devices, organization of the I/O function, OS design issues,, I/O buffering

Disc Scheduling – Disk scheduling Policies, RAID, Disk Cache, Examples System – Linux I/O and Windows I/O Management.

UNIT – III:

Memory Management - Memory Management requirements, Memory Partitioning, Paging, Segmentation.

Virtual memory – Hardware and Control structures, OS Software, Examples Systems – Linux and Windows Memory Management.

UNIT- IV:

Concurrency - Principles of Concurrency, Mutual Exclusion – Hardware Support, Semaphores, Monitors, Message Passing, Readers Writers Problem.

Principles of deadlock – deadlock prevention, detection and avoidance, Dining Philosophers Problem, Example Systems - Unix, Linux, and Windows Concurrency Mechanisms.

UNIT – V:

File Management – Overview, File Organization and Access, File Directories, File Sharing, Record Blocking, Secondary Storage Management, File System Security, Example system – Unix, Linux, and Windows.

Computer Security Threats – Concepts, Threats, Attacks, and Assets, Intruders, Malicious Software Overview, Viruses, Wirms, and Bots, Root kits

Computer Security Techniques - Authentication, Access Control, Intrusion Detection, Malware Defense, Dealing with Buffer Overflow Attacks, Example Systems

TEXT BOOKS:

1. Operating Systems – Internals and Design Principles, William Stallings, Sixth Edition, Pearson education.

REFERENCE BOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8TH Edition, John Wiley.

2. Modern Operating Systems, Andrew S Tanenbaum 3rd edition Pearson/ PHI

3. Operating System A Design Approach-Crowley,TMH.

OBJECT ORIENTED PROGRAMMING
(COMMON TO CSE & IT)

II Year B.Tech. - IT I- Sem.	L	T/P/D	C
	4	1/-/-	4

Objectives:

➢ The objective of this course is to provide object oriented concepts through which robust, secured and reusable software can be developed.

➢ To understand object oriented principles like abstraction, encapsulation, inheritance, polymorphism and also fundamentals of object-oriented programming in Java, including objects, classes, and interfaces.

➢ To provide the Knowledge in Packages, Exception handling, Multithreading.

➢ To Explore AWT and Applets to create GUI applications.

Outcomes:

➢ Understand the fundamental concepts of the object oriented paradigm and their implementation in the Java programming language.

➢ Write code to define classes and interfaces that uses class libraries such as java.lang, java.util, java.io.

➢ Use exception handling and multithreading in programs.

➢ Develop GUI applications.

UNIT I :

Object oriented thinking :- Need for oop paradigm, A way of viewing world – Agents, responsibility, messages, methods, classes and instances, class hierarchies (Inheritance), method binding, overriding and exceptions, summary of oop concepts, coping with complexity, abstraction mechanisms.

Java Basics History of Java, Java buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, nested and inner classes, String handling

UNIT II:

Inheritance – Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance,

costs of inheritance. Member access rules, super uses, using final with inheritance, polymorphism- method overriding, abstract classes, Object class

Packages and Interfaces : Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces, package java.io – File, Byte Streams, Character Streams, Stream I/O.

UNIT III:

Exception handling - Concepts of exception handling, benefits of exception handling, Termination or resumptive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes. Package java.util- Collections Framework: Collection Interface: Queue, Collection class:LinkedList,Stack class, StringTokenizer, Date, Random, Scanner.

Multi threading: Differences between multi threading and multitasking, tread life cycle, creating threads, thread priorities, synchronizing threads, inter thread communication, thread groups, daemon threads.

UNIT IV:

Enumerations, auto boxing Generics –A simple generics example.

Event Handling: Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes.

AWT: class hierarchy, component, container, panel, window, frame, canvas, graphics. Layout Manager – layout manager types – boarder, grid, flow, card and grib bag.

UNIT V:

AWT controls: Labels, button, canvas, scrollbars, text components, check box, check box groups, choices, lists panels – scrollpane, dialogs, menubar.

Applets – Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

Swing – Introduction, limitations of AWT, MVC architecture, components, containers.

TEXT BOOKS:

1. Java- the complete reference, 7th editon, Herbert schildt, TMH.
2. Understanding OOP with Java, updated edition, T. Budd, pearson eduction.

REFERENCES:

1. Thinking in Java 4th Edition, Bruce Eckel

2. Introduction to Java programming, Y. Daniel Liang, pearson education.

3. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell, eighth Edition, Pearson Education.

ENVIRONMENTAL STUDIES
(COMMON TO ALL)

II Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                                    3   -/-/-   3

Objectives:
- ➢ To fulfill the requirement of UGC as per the direction of Supreme Court of India.
- ➢ To create awareness & sensitize the young minds about the environmental issues & their impacts on various environmental components
- ➢ To motivate the students about the conservation of resources and protection of Environment from over exploitation.
- ➢ To bring awareness regarding various Environmental Policy of India.

Outcomes:
- ➢ Students will get knowledge on aspects & issues of Environment.
- ➢ Improved the attitude & thinking of the students will be positively towards earth & environment.
- ➢ It helps the students to improve the quality of life.
- ➢ Students will be benefited by knowing the concepts like Green Buildings, Low Carbon Lifestyle, International conventions etc.

Unit – I Eco-systems: Definition, Scope and Importance of ecosystem. Classification, structure and function of an ecosystem, Food chains, food webs and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

Unit-II Environmental Pollution and Control Technologies: Environmental Pollution & control: Classification of pollution, causes, effects and control technologies. **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Pollution from Power projects**, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary, Air: Overview of air pollution control technologies, Concepts of bioremediation. Field visit. **Global Environmental Problems and Global Efforts: C**limate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto

protocol and Montréal Protocol.

Unit – III Natural Resources: Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources: Forest resources, Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies..

Unit-IV Biodiversity & Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act

UNIT-V: Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

1. Text book of Environmental Science and Technology by M.Anji Reddy 2007, BS Publications.

2. Environmental studies by Erach Bharucha 2013, 2nd Ed. University Grants Commission, University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T.Wright. 2008 PHL Learning Private Ltd. New Delhi.

2. Environmental Engineering and science by Gilbert M.Masters and Wendell P. Ela .2008 PHI Learning Pvt. Ltd.

3. Environmental Science by Daniel B.Botkin & Edward A.Keller, Wiley INDIA edition.

4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.

DIGITAL LOGIC DESIGN
(COMMON TO CSE & IT)

II Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                         3   1/-/-   3

Objective:

- ➢ The overall course objective is to teach the students the fundamental concepts, methods of analysis, and design of digital logic devices and systems.

Outcomes:

- ➢ Interpret, convert, and represent different number systems and binary arithmetic.
- ➢ Manipulate and examine Boolean algebra, logic operations, Boolean functions and their simplifications.
- ➢ Analyze and design combinational systems composed of standard combinational modules, such as multiplexers and decoders.
- ➢ Analyze and design sequential systems composed of standard sequential modules, such as counters and registers.

UNIT – I:

Introduction to Binary System and Codes

Digital Systems. Binary Numbers. Number Base Conversions. Octal and Hexadecimal Numbers. Complements. Signed Binary Numbers. Binary Codes ,Excess3-codes. Binary Storage and Registers.

Boolean Algebra

Binary Logic Basic Definitions. Axiomatic Definition of Boolean Algebra. Basic Theorems and Properties of Boolean Algebra. Boolean Functions. Canonical and Standard Forms. Other Logic Operations.

UNIT – II:

Gate-Level Minimization.

Digital Logic Gates. Integrated Circuits. The Map Method. Four-Variable Map. Five-Variable Map. Product of Sums Simplification. Don't-Care Conditions. NAND and NOR Implementation. Other Two- Level Implementations. Exclusive-OR Function. Hardware Description Language(HDL).

UNIT – III:

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

UNIT – IV:

Sequential Logic Design, Synchronous Sequential Logic

Sequential Circuits. Latches. Flip-Flops. Analysis of Clocked Sequential Circuits. HDL For Sequential Circuits. State Reduction and Assignment. Design Procedure.

Registers and Counters: Registers. Shift Registers. Ripple Counters. Synchronous Counters. Other Counters. HDL for Registers and Counters.

UNIT – V:

Fundamentals of Asynchronous Sequential Logic

Introduction. Analysis Procedure. Circuits with Latches. Design Procedure. Hazards.

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.

TEXT BOOKS:

1. Digital Design, 4th Edition, M. Morris Mano, Pearson Education, Inc.,2002

REFERENCE BOOKS:

1. Digital Logic Design Principles, Norman Balabanian and Bradley Carlson, John Wiley & Sons(Asia) Pte. Ltd., 2002..

2. Fundamentals of Digital Circuits, A. Ananda Kumar, PHI, 2002.

OPERATING SYSTEMS LAB

II Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                                    0   -/3/-   2

Mandatory Experiments

1.   Simulate CPU scheduling algorithm for FCFS
2.   Simulate CPU scheduling algorithm for SJF
3.   Simulate CPU scheduling algorithm for Non preemptive Priority
4.   Simulate CPU scheduling algorithm for Round Robin
5.   Simulate CPU scheduling algorithm for SRT
6.   Simulate page replacement algorithm for FIFO
7.   Simulate page replacement algorithm for LRU
8.   Simulate page replacement algorithm for OPT
9.   Simulate page replacement algorithm for LFU
10. Simulate MFT
11. Simulate MVT
12. Simulate Bankers Algorithm for Dead Lock Avoidance
13. Simulate file allocation strategy for Sequential file
14. Simulate file allocation strategy for Simulate file allocation strategy for Linked file
15. Simulate file allocation strategy for Indexed file

Optional Experiments

16. Simulate CPU scheduling algorithm for Preemptive Priority
17. Simulate page replacement algorithm for Clock
18. Simulate Bankers Algorithm for Dead Lock Prevention
19. Simulate simple pure paging algorithm
20. Simulate simple pure segmentation algorithm
21. Simulate simple pure segmented paging algorithm
22. Simulate single level directory algorithm
23. Simulate two level directory algorithm
24. Simulate hierarchical (tree) directory algorithm
25. Simulate DAG directory algorithm

OBJECT ORIENTED PROGRAMMING LAB

II Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                                    0   -/3/-   2

Recommended Systems/Software Requirements:

- Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space

- JDK Kit. Recommended

Week 1:

   a) Write a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminant $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.

   b) The Fibonacci sequence is defined by the following rule:

   The fist two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.

Week 2 :

   a) Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.

   b) Write a Java program to multiply two given matrices.

   c) Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (Use String Tokenizer class of java. util)

Week 3 :

   a) Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.

   b) Write a Java program for sorting a given list of names in ascending order.

   c) Write a Java program to make frequency count of words in a given text.

Week 4:

   a) Write a java program to create an abstract class named Shape that contains an empty method named number of Sides ( ).Provide three classes named Trapezoid, Triangle and Hexagon such that each one of the classes extends the class Shape. Each one of the classes

contains only the method number of Sides ( ) that shows the number of sides in the given geometrical figures.

b) Write a java program to demonstrate multiple inheritance using Interfaces.

c) Write a java program that shows accessibility of members with in the same/other package.

Week 5 :

a) Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.

b) Write a Java program that reads a file and displays the file on the screen, with a line number before each line.

c) Write a Java program that displays the number of characters, lines and words in a text file.

Week 6 :

a) Write a Java program that:

i) Implements stack ADT.

ii) Converts infix expression into Postfix form

iii) Evaluates the postfix expression

Week 7:

a) Write a Java program that creates three threads. First thread displays "Good Morning" every one second, the second thread displays "Hello" every two seconds and the third thread displays "Welcome" every three seconds.

b) Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.

Week 8 :

a) Write a Java program for handling keyboard events.

b) Write a Java program for handling mouse events.

Week 9:

a) Develop an applet that displays a simple message.

b) Develop an applet that receives an integer in one text field, and computes its factorial Value and returns it in another text field, when the button named "Compute" is clicked.

Week 10 :

Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -,*, % operations. Add a text field to display the result.

Week 11:

Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box.

Week 12 :

   a) Write a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time No light is on when the program starts.

   b) Write a Java program that allows the user to draw lines, rectangles and ovals.

TEXT BOOKS :

1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI

2. Java - the complete reference, 7th editon, Herbert schildt, TMH.

PROBABILITY & STATISTICS
(COMMON TO CSE & IT)

II Year B.Tech. - IT II- Sem.   **L   T/P/D   C**

                                           3   1/-/-   3

Objective:

The prime objective of this course is to study the probabilistic theory and statistical inference and to solve the problems in those by using statistical methods.

UNIT – I Probability

Sample space and events – Probability – The axioms of Probability – Some Elementary theorems – Conditional probability – Baye's theorem, Random variables – Discrete and continuous, Expectation.

UNIT – II Distributions

Binomial, Poisson & Normal distribution, sampling distributions – Sampling distribution of means (σ known and Unknown).

UNIT – III Testing of Hypothesis I

Point estimation, Interval estimation, Bayesian estimation, Testing of Hypothesis- Null hypothesis – Alternative hypothesis, Type I, & Type II errors – critical region confidence interval for mean, testing of hypothesis for single mean and difference between the means.

UNIT – IV Testing of Hypothesis II

Confidence interval for the proportions, Tests of hypothesis for the proportions- single and difference between the proportions.

Small Samples - t-distributions, F-Distributions, χ^2 distribution.

UNIT – V Correlation, Regression & Stochastic Processes

Coefficient of correlation – Regression Coefficient – The lines of regression – The rank correlation.

Introduction to stochastic process – Markov process – classification of states – Examples of Markov chains – Transition probabilities – Limiting Probabilities – Chapman – Kolmogorov's theorem.

TEXT BOOKS:

1. Probability & Statistics by D.K. Murugesan & P.Guru Swamy, Anuradha Publications.

2. Probability and Statistics by G.S.S.Bhishma Rao, Scitech Publications.

3. Probability and Statistics by Dr.Shahnaz Bathul.

REFERENCES:

1. Probability & Statistics for Engineers by Miller and John E Freund, Prentice Hall of India.

2. Fundamentals of Mathematical Statistics by S.C. Gupta & V.K. Kapoor, S-Chand & Sons.

3. Stochastic Process by J. Medhi, New Age International.

SOFTWARE ENGINEERING
(COMMON TO CSE & IT)

II Year B.Tech. - IT II- Sem.   **L   T/P/D   C**

                                                            3   1/-/-   3

Objectives :

➢ To define software engineering and explain its Significance in Software Development

➢ To discuss the concepts of software products and software processes

➢ To introduce good Software design techniques and the notion of professional responsibility, Software testing, documentation and maintenance

➢ To explain the importance of process visibility.

Outcomes :

➢ Understand the system development lifecycle, principles of object-oriented software construction, software-development process, including requirements analysis, design, programming, testing and maintenance.

➢ The range of situations in which computer systems are used, the ways in which people interact with them

➢ Design and plan software solutions to problems using an object-oriented strategy

➢ write and test programs using at least one object-oriented programming language

➢ Specify, design and construct based on UML and application software

UNIT I :

Introduction to Software Engineering : The evolving role of software, Changing Nature of Software, Software myths.

A Generic view of process : Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Process models : The waterfall model, Incremental process models, Evolutionary process models, The Unified process.

UNIT II :

Risk management: Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software

requirements document.

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

UNIT III:

System models: Context Models, Behavioral models, Data models, Object models, structured methods

Creating an architectural design : Software architecture, Data design, Architectural styles and patterns, Architectural Design.

Design & implementation: OOD using UML, Design patterns, Implementation issues, Open source development.

UNIT IV :

Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

Software Reuse : The reuse landscape, application framework, software product line, COTS product reuse.

UNIT V :

Product metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

Metrics for Process and Products : Software Measurement, Metrics for software quality.

Quality Management : Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

TEXT BOOKS :

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition.Mc GrawHill international Edition.

2. Software Engineering- Sommerville, 7th edition, Pearson education.

REFERENCES :

1. Software Engineering- K.K. Agarwal & Yogesh Singh, New Age International Publishers

2. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiely.

3. Systems Analysis and Design- Shely Cashman Rosenblatt,Thomson Publications.

ADVANCED DATA STRUCTURES

II Year B.Tech. - IT II- Sem.	L	T/P/D	C
	4	1/-/-	4

Objectives:

- ➢ Define the term 'data structure'.
- ➢ To know the classifications of data structures, i.e., linear and non-linear and understand the basic operations and their complexities.
- ➢ Be familiar with advanced data structures such as balanced search trees, hash tables, priority queues.
- ➢ Be familiar with several sub-quadratic sorting algorithms including quicksort, mergesort and heap sort
- ➢ Master the implementation of linked data structures such as linked lists and binary trees

Outcomes:

- ➢ Student will come to know classification of data structures
- ➢ Student will be able to know operations performed on data structures and their complexities
- ➢ Student will know to write programs using java for different operations of data structures

Unit-I:

Java Review : Generic methods, Garbage collection, Recursion, Testing and Debugging, Performance analysis-time complexity and space complexity, O-notation, Omega notation and Theta notation, Performance measurement.

Review of basic data structures - stack ADT, queue ADT, implementation using template classes in Java.

Unit-II:

DeQueue– Definition, ADT, implementation using template classes in Java.

Priority Queues – Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion

Review of sorting techniques: Quick sort, Merge sort, Heap sort.

Unit-III:

Dictionaries: linear list representation, hash table representation, hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing.

Unit-IV:.

Binary trees: properties, representation, traversal, ADT.

Search trees **:** Binary search trees, definition, ADT, implementation, operations-searching, insertion and deletion

Graphs-Basic terminology, representation of Graphs, ADT, Graph search methods – DFS, BFS, Applications: spanning trees.

Unit -V:

Balanced search trees (part II)- AVL trees, definition, height of an AVL tree, representation, operations-insertion, deletion and searching.

Introduction to Red-Black Trees-Insertion, deletion, searching.

Search trees (part II) : Introduction to B-Trees-B-Tree of order m, height of a B—Trees, insertion, deletion and searching, B+ Trees-Insertion, deletion, searching and comparison.

TEXT BOOKS:

1. Data structures, Algorithms and Applications in Java, S. Sahni, University press (India) pvt ltd, 2nd edition, Universities Press.

2. Data structures and Algorithms in Java, Michael T. Goodrich, R. Tamassia and D. Mount, Seventh Edition Wiley student edition, John Wiley and Sons.

REFERENCE-:

1. Data Structures and Algorithm Analysis in Java, Mark Allen Weiss, Pearson Education, second edition.

2. Data Structures and Algorithms in Java, Third Edition, Adam Drozdek, Thomson

COMPUTER ORGANIZATION
(COMMON TO CSE,IT)

II Year B.Tech. - IT II- Sem.	L	T/P/D	C
	4	1/-/-	4

Objectives:

➢ To acquire the knowledge of the basic hardware and software issues of computer organization.

➢ To analyze the operational concepts of computers data representation.

➢ To know about the architecture and the features of advanced processors.

➢ To learn Hierarchical memory system including cache memories and virtual memory.

➢ To acquire the knowledge about computer architecture, machine language, and low-level programming.

Outcomes: Up on successful completion of this course the student will have

➢ The ability to apply knowledge of computer science and electronics engineering to computer hardware and assembly level programming.

➢ The ability to design, analyze and interpret data.

➢ Understanding of how instruction pipelining enhances processor performance.

UNIT I:

BASIC STRUCTURE OF COMPUTERS: Computer Types, Functional unit, Basic OPERATIONAL concepts, Bus structures, Software, Performance, multiprocessors and multi computers. Data Representation, Fixed Point Representation, Floating – Point Representation, Error Detection codes.

UNIT II:

REGISTER TRANSFER LANGUAGE AND MICROOPERATIONS: Register Transfer language. Register Transfer Bus and memory transfers, Arithmetic Micro-operations, logic micro operations, shift micro operations, Arithmetic logic shift unit. Instruction codes, Computer Registers, Computer instructions - Instruction cycle.

Memory: Reference Instructions, Input - Output and Interrupt, STACK organization, Instruction formats, Addressing modes, DATA Transfer and manipulation. Program control, Reduced Instruction set computer.

UNIT III:

MICRO PROGRAMMED CONTROL: Control memory, Address sequencing, micro program example, design of control unit, Hard wired control, Micro programmed control.

COMPUTER ARITHMETIC: Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating point Arithmetic operations, Decimal Arithmetic unit, Decimal Arithmetic operations.

UNIT IV:

MEMORY ORGANIZATION: Memory hierarchy, Main memory, Auxiliary memory, Cache memory, Virtual memory, Introduction to RAID.

INPUT-OUTPUT ORGANIZATION: Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct memory Access, Input - Output Processor (IOP), Serial communication; Introduction to peripheral component, Interconnect (PCI) bus. Introduction to standard serial communication protocols like RS232, USB, and IEEE1394.

UNIT V:

PIPELINE AND VECTOR PROCESSING: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors.

MULTIPROCESSORS: Characteristics or Multiprocessors, Interconnection Structures, Interprocessor Arbitration. InterProcessor Communication and Synchronization, Cache Coherence. Shared Memory Multiprocessors.

TEXT BOOKS:

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

REFERENCE BOOKS:

1. Computer Organization and Architecture - William Stallings Sixth Edition, Pearson/PHI
2. Structured Computer Organization - Andrew S. Tanenbaum, 4th Edition PHI/Pearson

DATABASE MANAGEMENT SYSTEMS
(COMMON TO CSE,IT)

II Year B.Tech. - IT II- Sem.	L	T/P/D	C
	4	1/-/-	4

Objectives:

- To design DBMS and explain its significance in IT projects
- To design ER diagrams
- To develop RDBMS relation schemas from ER diagrams
- To develop queries for user required screens and reports and develop SQLs
- To develop concurrent queries and optimize them using queries manually

Outcomes:

- Student can define ER model for mini and main projects
- Student can develop RDBMS relation schemas from ER diagrams
- Student can develop queries required
- Student can develop concurrent queries and optimize them using queries manually

UNIT I :

Data base System Applications, Purpose of Database Systems, 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 Architecture – Storage Manager – the Query Processor

Data base design and ER diagrams: ER Model, Entities, Attributes and Entity sets, Relationships and Relationship sets, ER Design Issues, Concept Design, Conceptual Design for University Enterprise.

Introduction to the Relational Model : Structure , Database Schema, Keys, Schema Diagrams

UNIT II :

Relational Query Languages, Relational Operations.

Relational Algebra: Selection and projection set operations, renaming, Joins, Division, Examples of Algebra overviews, Relational calculus, Tuple relational Calculus, Domain relational calculus, Expressive Power of Algebra and calculus.

Overview of the SQL Query Language : Basic Structure of SQL Queries, Set Operations, Aggregate Functions, GROUPBY, HAVING, Nested Sub queries, Views, Triggers, Modification of the Database, Accessing SQL from a programming language.

UNIT III:

Normalization: Introduction, Non loss decomposition and functional dependencies, First, Second, and third normal forms – dependency preservation, Boyee/Codd normal form.

Higher Normal Forms: Introduction, Multi-valued dependencies and Fourth normal form, Join dependencies and Fifth 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, Failure with loss of nonvolatile storage, **Advance Recovery systems:** Remote Backup systems.

UNIT V :

File organization: File organization – various kinds of indexes, Query Processing, Measures of query cost, Selection operation, Projection operation, Join operation, set operation and aggregate operation, Relational Query Optimization, Transacting SQL queries, Estimating the cost, Equivalence Rules.

TEXT BOOKS :

1. Data base System Concepts, Silberschatz, Korth, McGraw hill, Sixth Edition.(All UNITS except III th)

2. An Introduction to Database systems, C.J. Date, A.Kannan, S.Swami Nadhan, Pearson, Eight Edition for UNIT III.

REFERENCE BOOKS :

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGrawHill 3rd Edition.

2. Fundamentals of Database Systems, Elmasri Navathe Pearson Education.

PRINCIPLES OF PROGRAMMING LANGUAGES
(COMMON TO CSE & IT)

II Year B.Tech. - IT II- Sem.	L	T/P/D	C
	4	1/-/-	4

Objectives :

➢ Describe the main principles of imperative, functional, object oriented and logic oriented programming languages;

➢ To provide an introduction to formalisms for specifying syntax and semantics of programming languages, including an introduction to the theory of formal languages,

➢ To provide an exposure to core concepts and principles in contemporary programming languages, and

➢ To explore various important programming methodologies, such as functional programming, logic programming, programming with abstract data types, and object-oriented programming.

Outcomes :

➢ compare different programming languages

➢ understand the importance and evolution of programming language and

➢ To know the central formalisms used in the description of programming languages.

➢ analyze the principles of an imperative, functional, object oriented or logic oriented programming language

➢ Increase the ability to learn new programming languages

➢ choose among alternative ways to express things

UNIT I :

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

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

UNIT II:

Data types: Introduction, primitive, character, user defined, array,

associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization.

Expressions : Arithmetic relational and Boolean expressions, Short circuit evaluation mixed mode assignment, Assignment Statements, Control Structures –

Unit III:

Statements: Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions user defined overloaded operators, co routines.

UNIT IV:

Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT, object oriented programming in small talk, C++, Java, Ada 95.

Concurrency: Subprogram level concurrency, semaphores, monitors, massage passing, Java threads.

Exception handling : Exceptions, exception Propagation, Exception handler in Ada, C++ and Java.

UNIT V :

Logic Programming Language : Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages.

TEXT BOOKS :

1. Concepts of Programming Languages Robert .W. Sebesta 8/e, Pearson Education., 2008
2. Programming Languages – Louden, Second Edition, Thomson.

REFERENCES :

1. Programming Languages- Ghezzi, 3/e, John Wiley.
2. Programming Languages Design and Implementation – Pratt and Zelkowitz, Fourth Edition PHI/Pearson Education.
3. Programming Languages- Watt, Wiley Dreamtech.

DATABASE MANAGEMENT SYSTEMS LAB

II Year B.Tech. - IT II- Sem.

	L	T/P/D	C
	0	-/3/-	2

1. Creating tables for various relations (in SQL)
2. Implementing the queries in SQL for
   a) Insertion
   b) Retrieval (Implement all the operation like Union, Intersect, Minus, in, exist, aggregate functions (Min.,Max…) etc…
   c) Updation
   d) Deletion
3. Creating Views
4. Writing Assertions
5. Writing Triggers
6. Implementing Operations on relations (tables) using PL/SQL

MINI PROJECT

Objective: This lab enables the students to practice the concepts learnt in the Subject DBMS by developing a database for an example company named "Roadway Travels"' whose description is as follows, The student is expected to practice the designing, developing and querying a database in the context of example database "Roadway travels"..

Bus reservation system

Traveling is growing business in Andhra Pradesh and other states of India, and even in some of other countries also.

Buses are the public transport used to communicate between cities. The tickets for the buses have to be bought only by going to the station. This wastes a lot of time as one has to go to the station buy a ticket.

To save time and efforts, many agents are allowed to give reservation at different places of a city or town, such that we can reserve a ticket by walking to a nearest place than going to a far away bus station. This facility is made many public happier.
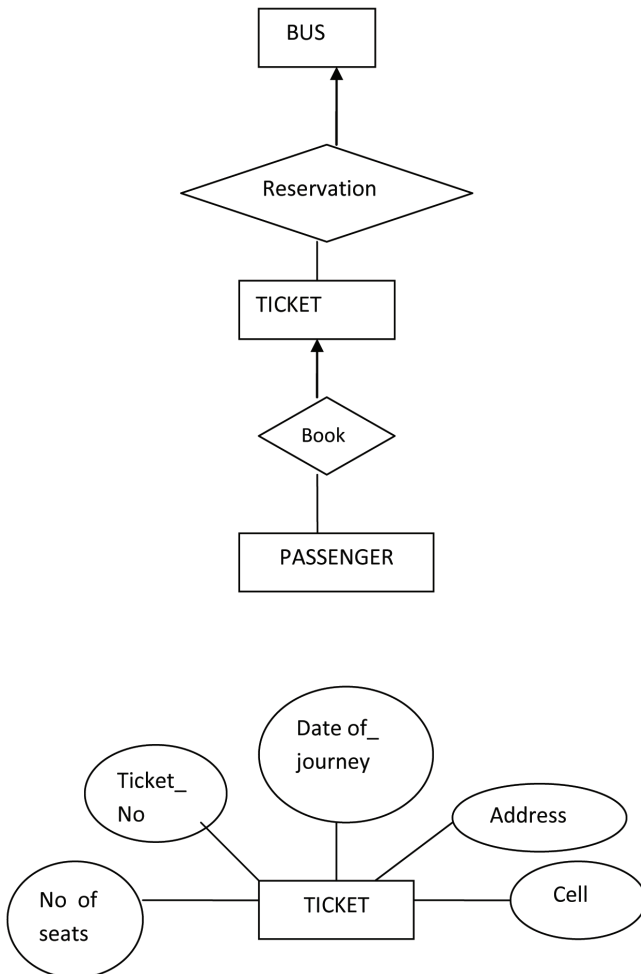
Of course we can give our cell phone number of the person who is boarding the bus such that the message will be sent to that cell phone number; such that the person can board into the bus just by showing the message of the cell phone with out producing the printed ticket even. It is convent for booking ticket for the children who are studying at some other place also.
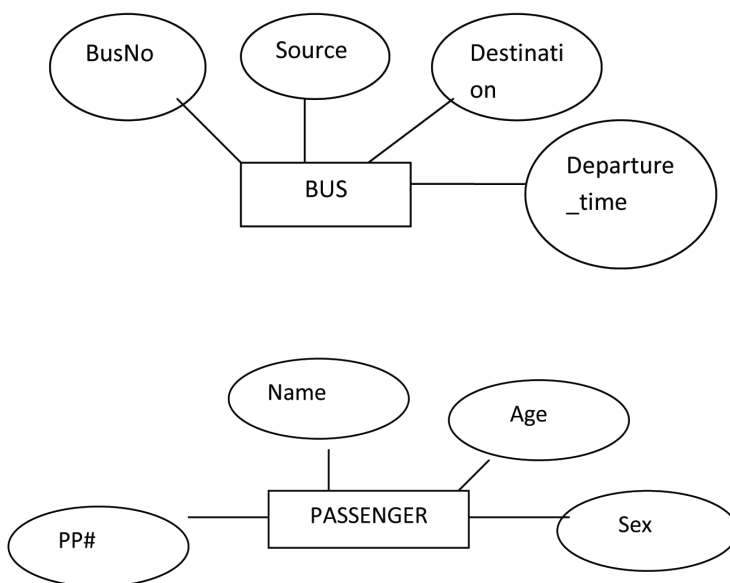
Then it leads to the concept of online reservation through Internet by sitting at your home using your credit card. The state of art of private bus

reservations now are a ticket can be booked online by using our table top or lap top with our credit card by giving our children cell phone number from our house, even with out walking to the nearest agent. Of course we can do reservation even at mid night, or early morning when the nearest agent's office is not available.

Enquiries can be performed by our selves through Internet for the availability of buses, timings and seats, of different facilities.

Different statistical details are required for analysis for the sake of scheduling new busses, or rescheduling the existing buses.

```
        ┌──────────┐
        │   BUS    │
        └──────────┘
             ▲
             │
        ◇ Reservation ◇
             │
        ┌──────────┐
        │  TICKET  │
        └──────────┘
             ▲
             │
          ◇ Book ◇
             │
        ┌────────────┐
        │ PASSENGER  │
        └────────────┘
```

```
              ( Date of_
                journey )
  ( Ticket_
     No )                    ( Address )

( No of        ┌──────────┐    ( Cell )
  seats )──────│  TICKET  │
               └──────────┘
```

BUS (**Bus_No**, Source, Destination, Departure_Time)

Ticket(RC,**Ticket_No**,**Bus_No**, Date_of_journey, No_Seats, Cell_No, Address)

Passenger (**PPNO, Ticket_No**, Name, Age, Sex)

Practice the following Queries:

1. Display unique PPNO of all passengers.
2. Display all the names of male passengers.
3. Display the ticket numbers and names of all the passengers.
4. Find the names of passengers whose age is between 30 and 45.
5. Display the sorted list of passengers names
6. Write a Query to display the Information present in the Passenger and cancellation tables.
7. Find the total number of cancelled seats.

Design and develop the following

1. Develop a trigger program and execute it.
2. Develop a cursor program and execute it.
3. Develop a program and write a driver for executing it

ADVANCED DATA STRUCTURES LAB

II Year B.Tech. - IT II- Sem. **L   T/P/D   C**

                                    0   -/3/-   2

Objectives:

- To make the student learn a object oriented way of solving problems.
- To make the student write ADTS for all data structures.
- To make the student learn different algorithm design techniques.

Recommended Systems/Software Requirements:

- Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space
- JDK Recommended

Week 1: Programs to implement

a)Bubble Sort ADT b)Selection Sort ADT

Week 2: Programs to implement

a)Linear Search ADT b)Binary Search ADT

Week 3:Programs to implement the following using an array.

a) Stack ADT b) Queue ADT

Week4: Write programs to implement the following using a singly linked list.

a) Stack ADT b) Queue ADT

Week5: Write programs to implement the deque (double ended queue) ADT using a doubly linked list and an array.

Week 6: Write a 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.

Week7: Write programs that use recursive functions to traverse the given binary tree in

a) Preorder b) inorder and c) postorder.

Week8: Write programs that use non-recursive functions to traverse the given binary tree in

a) Preorder b) inorder and c) postorder.

Week9: Write programs for the implementation of bfs and dfs for a given graph.

Week10: Write programs for implementing the following sorting methods:

a)   Merge sort b) Heap sort c)QuickSort

Week11: Write a program to perform the following operations

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

Week12: Write a program to implement all the functions of a dictionary (ADT) using hashing.

 (Note: Use Class Templates In the above Programs)

TEXT BOOKS :

1.   Data structures, Algorithms and Applications in C++, S. Sahni, University press (India) pvt ltd, 2nd edition, Orient Longman pvt.ltd.

2.   Data structures and Algorithms in C++, Michael T. Goodrich, R. Tamassia and D.Mount, Seventh Edition Wiley student edition, John Wiley and Sons.

WEB TECHNOLOGIES
(COMMON TO CSE,IT)

III Year B.Tech. - IT I- Sem.	L	T/P/D	C
	4	1/-/-	4

Objectives :

- ➢ Developing static web pages using HTML and CSS.
- ➢ Data Validations using JavaScript.
- ➢ To build XML applications with DTD and style sheets that span multiple domains.
- ➢ Manipulating data in the database using JDBC
- ➢ Developing Dynamic pages using servlets, JSP, Cookies and Sessions.

Outcomes :

- ➢ Design static web pages and provide client side authentication.
- ➢ Develop new tag sets using XML mechanism.
- ➢ Understand database connectivity and retrieving data using client/ server database.
- ➢ Design dynamic web pages and develop web applications using MVC architecture.

Unit I:

HTML: Common tags, List, Tables, images, forms. Frames; Cascading Style sheets.

Unit II:

JavaScript: Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script.

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

UNIT-III

Accessing Database: JDBC Drivers, Java.sql Package, Manipulating data in database, Calling Procedures/functions.

Web servers: Tomcat Server installation & Testing.

Introduction to Servlets: Lifecycle of a Servlets, JSDK, The Servlet API, Basic servlet programs, The javax.servlet Package, Reading Servlet parameters, Reading Initialization parameters.

Unit IV:

More on Servlets:The javax.servlet.http package, Handling Http Request & Responses, Using Cookies,Session Tracking, Security Issues.

Introduction to JSP: The Problem with Servlets. The Anatomy of a JSP Page, JSP Processing. Generating Dynamic content using scripting elements, JSP expressions, Implicit objects.

Unit V:

More on JSP: Declaring Variables and Methods,Error Handling and Debugging, Sharing Data between JSP pages, Requests and Users Passing Control and Data between Pages-Sharing Session and Application Data-Memory Usage Considerations.

Introduction to Java beans: Persistence, Serialization, Writing basic beans.

MVC Architecture: MVC Architecture, Using Java Beans, Access to Database using beans

TEXT BOOKS:

1.   Programming world wide web-Sebesta,

2.   Core servlets and java server pages volume 1 : core technologies Marty Hall and Larry Brown Pearson

3.   Core Java Volume-2 (Advanced Features) Kscay S. Horstmann, Gary Cornell

REFERENCE BOOKS:

1.   Pearson Web Programming, building internet applications, Chris Bales 2nd edition, WILEY Dreamtech (UNIT 1 2)

2.   Beginning Web Programining-Jon DuckeU WROX.

3.   Java Server Pages. Pckowsky, Pearson.

MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

III Year B.Tech. - IT I- Sem.	L	T/P/D	C
	4	1/-/-	4

Objectives:

➢ To get knowledge of micro processor, and Intel family (8086/8088)

➢ To get knowledge of assembly language and Intel (8086/8088)

➢ To get knowledge of general peripherals and Intel supporting chips like PPI, USART, PIC, DMA etc

Outcomes:

➢ Student has knowledge of Micro Processors and Intel chips, can be used to develop systems by using them.

➢ Student has knowledge of assembly language knowledge, can be used for development of assemblers

➢ Student has knowledge of assembly language knowledge, can be used for development of OS

➢ Some OS at installation of supporting chips, can be used to develop device drivers in OS

UNIT-I:

8086 Architecture.- CPU Architecture Internal operation. Machine Language Instructions – Addressing Modes, Instruction Formats

Assembly language programming – Assembler Instruction Format, Data Transfer Instructions, Arithmetic Instructions, Branch Instructions, Loop Instructions, Flag Manipulation Instructions, Logical Instructions, Shift and Rotate Instructions.

UNIT-II:

Modular Programming – Access to External Identifiers, Stacks, Procedures – Calls, Returns, and Procedure Definitions, Saving and Restoring Registers, Procedure Communications, Recursive Procedures,

UNIT-III:

Macros – Facilities, Local Labels, Nested Macros, Controlled Expansion and Other Functions,

Byte and String Manipulation.- String Instructions, REP Prefix.

UNIT-IV:

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

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

UNIT-V:

Interrupt structure of 8086. Vector interrupt table. Interrupt service routines. Introduction to DOS and BIOS interrupts. 8259 PIC Architecture and interfacing cascading of interrupt controller and its importance.

Serial data transfer schemes. Asynchronous and Synchronous data transfer schemes. 8251 USART architecture and interfacing. TTL to RS 232C and RS232C to TTL conversion. Sample program of serial data transfer. Introduction to High-speed serial communications standards, USB.

TEXT BOOKS :

1. Micro Computer System 8086/8088 Family Architecture, Programming and Design - By Liu and GA Gibson, PHI, 2nd Ed.,

2. The 8088 and 8086 Microprocessors Programming, Interfacing, Software, Hardware and Applications, Fourth Edition, Walter A. Triebel, Avatar Singh, Pearson.

REFERENCES:

1. The 8086/8088 Family Design, Programming, and Interfacing, John Uffenbeck, Prentice-Hall of India

2. The Micro Processors & Interfacing – Douglas V. Hall, 2007.

COMPUTER GRAPHICS

III Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                                                         3   1/-/-   3

Objectives:

➢ To provide understanding of the algorithms and theories that form the basis of computer graphics and modeling.

➢ To provide a rigorous presentation of the mathematical elements and algorithms involved in the generation and viewing of two-dimensional and three-dimensional graphic primitives.

➢ Help the student to use the knowledge in the growing industry of animation

➢ Know the concept of basic primitives & advance primitives of GC along with clipping, projection and how they are used

Outcomes:

➢ Can use the concepts of computer graphics to construct different images in software.

➢ Easy for the student to learn different software used in computer graphics.

➢ Use of the concepts to design some animation sequences.

➢ Easy to understand multimedia technology & Can model 2-D and 3-D objects.

➢ Exposed to graphical input & output devices along with familiarities toward projection of 3-D objects on 2-D plane, Clipping ,fill techniques

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

UNIT III :

3-D object representation : Polygon surfaces, quadric surfaces, Spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon rendering methods.

UNIT IV :

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

 UNIT V:

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

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

TEXT BOOKS:

1. "Computer Graphics *C version*", Donald Hearn 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.

COMPUTER NETWORKS

III Year B.Tech. - IT I- Sem.   L   T/P/D   C

                                         4   1/-/-   4

Objectives:

➢ To make student understand various design issues that lead to the creation of protocols in various layers of network model

➢ To give a comprehensive idea of various Internet protocols in TCP/IP model

➢ To make student understand issues involved in wireless networks which make them operational

Objectives:

➢ student should be able to design a protocol depending on various factors involved in communicating from one node to another node in a network

➢ students should be able to give network address and should be able to specify subnets and supernets by setting netmask

➢ able to explain what are various types of wireless networks and how these communicate using the given protocols

UNIT-I:

Introduction: Uses of Computer Networks, Network Hardware, Network Software, Reference models OSI, TCP/IP, Example networks

Physical Layer: Signals, channel data rate, Guided Transmission Media: Magnetic Media, Twisted Pair, Coaxial Cable, Fiber Optics, Wireless transmission, Digital Modulation and Multiplexing, the Mobile Telephone System.

UNIT-II:

Data Link Layer: Design issues, services provided to the network layer, Framing, Error Control, Flow Control, Error detection and correction, Elementary Protocols: stop and wait, Sliding Window, Go Back N, Selective Repeat, Data Link Layer in HDLC and Internet.

Medium Access Sub Layer: Channel Allocation, Multiple Access Protocols ALOHA CSMA, Ethernet, Wireless LAN's, Data Link Layer Switching.

UNIT-III:

Network Layer: Design issues, **Routing algorithms:** the Optimality Principle, Shortest Path routing, flooding, Distance Vector Routing, Link State Routing, Hierarchical Routing, Broadcast & Multicast Routing, Routing for Mobile hosts, Routing in Ad-Hoc Networks, **Quality Of Service:** Application Requirements, Traffic Shaping, Congestion control algorithms

Internetworking: How Networks Differ, How Networks can be Connected, Tunneling, Internetwork Routing, Packet Fragmentation.

UNIT-IV:

Network Layer in the Internet: IP Version 4 protocol, IP Addresses, IP Version 6, Internet Control Protocols, OSPF, BGP, Internet multicasting, Mobile IP

Transport Layer: The Transport service, Elements of Transport Protocols, The Internet Transport Protocols: UDP, The Internet Transport Protocols: TCP.

UNIT-V:

Application Layer:

Domain Name System: DNS Name Space, Resource Records, Name Servers.

Electronic mail:-Architecture and services, User Agent, Message Formats, Message transfer and Final delivery. **Streaming Audio and Video** Digital Audio, Digital Video, Streaming Stored Media, Streaming Live Media, Real-Time Conferencing. **Content Delivery:** Content and Internet Traffic, Server Farms and Web Proxies**,** Server Replication, Content Delivery Networks, Peer-to-Peer Networks.

TEXT BOOKS:

1. Computer Networks — Andrew S Tanenbaum, 5th Edition. Pearson Education/PHI

REFERENCES:

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

2. Computer Networking A Top-Down Approach —   James F Kurose, Keith W Ross 5th edition. Pearson Education Inc

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(COMMON TO ALL)

III Year B.Tech. - IT I- Sem. 　　　　　　　　**L　T/P/D　C**

　　　　　　　　　　　　　　　　　　　　　　　　3　1/-/-　　3

Objectives

➢ To explain the basic principles of managerial economics, accounting and current business environment underlying business decision making.

Outcomes:

➢ The candidate would be in a position to understand, analyze and interpret the basics of economics, accounting and that of business environment associated with.

UNIT-I   INTRODUCTION TO BUSINESS & MANAGERIAL ECONOMICS

Characteristic features of Business, Features and evaluation of Sole proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types. Definition, Nature and Scope of Managerial Economics, Features & Relationship with other sciences – Managerial Economics Concepts – Demand Analysis: Demand Determinants, Law of Demand and its exceptions.

Definition, Types, Measurement and Significance of Elasticity of Demand. Demand forecasting, Factors governing demand forecasting, methods of demand forecasting (survey methods, statistical methods, expert opinion method, test marketing controlled experiments, judgmental approach to demand forecasting), Demand Forecasting for new Products.

UNIT-II   THEORY OF PRODUCTION

Production Function – Law of diminishing returns, Isoquants and Isocosts, MRTS, Least Cost Combination of Inputs, Cobb-Douglas Production function, Laws of Returns, Internal and External Economies of Scale.

Cost Analysis:-Cost Concepts, Opportunity cost, Fixed vs. Variable costs, Explicit costs Vs.Implicit Costs, Out of pocket costs vs. Imputed costs. Cost analysis in Short-run & Long-run. Break-even Analysis (BEA) – Determination of Break-Even points (Simple problems) – Managerial Significance and limitations of BEA.

UNIT-III   INTRODUCTION TO MARKET PRICING METHODS

Market Structures: Types of competition, Features of Markets based on competition, Price-Output determination in case of perfect competition and monopolistic competition.

Objectives and policies of Pricing - Methods of Pricing: Cost plus Pricing,

Marginal Cost Pricing, Sealed Bid Pricing, Going Rate Pricing, Limit Pricing, Market Skimming Pricing, Penetration Pricing, Two-Part Pricing, Block Pricing, Bundling Pricing, Peak Load Pricing, Cross Subsidization.

UNIT-IV : FINANCIAL ACCOUNTING & ANALYSIS

Accounting – Definition, Accounting Concepts & Conventions, Importance of Accountancy, Difference between Book-keeping & Accountancy, Double-Entry Book Keeping - Advantages, Types of Accounts and its rules, Accounting Cycle - Journal, Ledger, Trial Balance .

Final Accounts :- Introduction to Final Accounts (Trading, Profit & Loss Account and Balance Sheet) Adjustments with Simple Problems.

Introduction to Ratio Analysis, Need & Importance of Ratios (Theory only)

UNIT-V   CAPITAL AND CAPITAL BUDGETING

Introduction to Sources of raising finance

Nature and scope of capital budgeting, features of capital budgeting proposals, Methods of capital Budgeting, Payback Method, Accounting Rate of Return (ARR) and Net Present Value NPV , Profitability Index(PI), Internal Rate of Return (IRR),(Simple Problems)

TEXT BOOK

1.   Managerial Economics and Financial Analysis – A R Aryasri

REFERENCES

1.   Managerial Economics Analysis, Problems & Cases – P.L.Mehta.

2.   Managerial Economics – Varshney & Maheshwari

3.   Financial Management Text and problems – Khan & Jain

4.   Financial Management – I.M.Pandey

5.   Double Entry Book Keeping – T.S. Grewal

6.   Managerial Economics & Financial Analysis – S.A Siddiqui & A.S Siddiqui

7.   Managerial Economics & Financial Analysis – Raghunatha Reddy & Narasimhachary

8.   Financial Accounting – S.N. Maheswari & S.K Maheswari

DESIGN AND ANALYSIS OF ALGORITHMS
(COMMON TO CSE & IT)

III Year B.Tech. - IT I- Sem.	L	T/P/D	C
	3	1/-/-	3

Objectives :

➢ To teach the student the concepts of object oriented and generic programming.

➢ To teach the student how to analyze the performance of algorithms.

➢ To give exposure of text processing techniques.

➢ To teach the student the implementation of data structures.

Outcomes :

➢ Develop programs that map to real world entities.

➢ Develop programming skills.

➢ Apply suitable data structures for the application.

➢ Simplify the text processing tasks.

UNIT I:

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

UNIT II:

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

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

UNIT III:

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

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

UNIT IV:

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

UNIT V:

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

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

TEXT BOOKS:

1. Fundamentals of Computer Algorithms, Ellis Horowitz,Satraj Sahni and Rajasekharam,Galgotia Publications pvt. Ltd.

REFERENCE BOOKS:

1. Introduction to Algorithms, second edition, T.H.Cormen, C.E.Leiserson, R.L.Rivest,and C.Stein,PHI Pvt. Ltd./Pearson Education

2. Introduction to Design and Analysis of Algorithms A strategic approach, R.C.T.Lee,   S.S.Tseng, R.C.Chang and T.Tsai, Mc Graw Hill.

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

WEB TECHNOLOGIES LAB

III Year B.Tech. - IT I- Sem.	L	T/P/D	C
	0	-/3/-	2

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/**XML**Spy – 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

Question-1

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

1) **HOME PAGE:**

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

Top frame : Logo and the college name and links to Home page, Login page, Registration page,

Catalogue page and Cart page (the description of these pages will be given below).

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

For e.g. : When you click the link **"CSE"** the catalogue for **CSE** Books should be displayed in the Right frame.

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

description of the web site.

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

2) LOGIN PAGE:

This page looks like below:

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

3) CATOLOGUE PAGE:

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

The details should contain the following:

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

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

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

Question-2

4) CART PAGE:

The cart page contains the details about the books which are added to the cart.

The cart page should look like this:

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

Question-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.

Question-4:

Use CSS to perform the following Top Frame:

Format hyper links (changing the colors, text appearance).

Use CSS to maintain consistency of formatting across all the web pages

Question-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

Question-6

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).

Using JDBC perform the following

1. Create the table Book (Book name , Price, Quantity, Amount)

2. Program for supporting various data manipulations on the book table).

Qusetion-7:

Servlet which displays welcome message for the given user

Serrvlet which accepts the data provided by the user in the login form and displays it

Servetl to connect to the database and stores the details of user (servlet should take the details of user from registration form)

Qusetion-8:

User Authentication :

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

1. Create a Cookie and add these four user id's and passwords to this Cookie.

2. Read the user id and passwords entered in the Login form (Question-1)   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.

Question-9:

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()).

Qusetion-10

JSP page which displays welcome message for the given user

JSP page which accepts the data provided by the user in the login form and displays it

JSP page to connect to the database and stores the details of user (servlet should take   the details of ser from registration form)

Question-10

Using MVC Architecture write JSP to store the details of registered users in users table

Question-11

Question-11:

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 local host). 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).

MICROPROCESSOR AND ASSEMBLY
LANGUAGE PROGRAMMING LAB

III Year B.Tech. - IT I- Sem.   **L**   **T/P/D**   **C**

                                     0   **-/3/-**   **2**

I. List of 8086 / 8088 Assembly language programs

Programs with out input and output (value can be checked only through debugger) (Total 26 programs)

1. Signed multiplication, division, operands, result a byte/word
    (4 programs)

2. Addition, subtraction, operands, results as multiple bytes / words.
    (4 programs)

    a. Addition, subtraction, operands, result a byte/word/double words
        (6 programs)

3. Unsigned multiplication, one operand, result multiple byte / word, other is byte/word (2 programs)

    a. Operands, result a byte/word (2 programs)

4. Unsigned division, dividend, quotient multiple words/bytes, divisor byte /word (2 programs)

    a. Operands, result a byte/word (2 programs)

    b. Dividend, quotient triple word, divisor a word (1 programs)

    c. Multiplicand is double word multiplier is a word (1 programs)

5. Unsigned multiplication, operands 2 words, result 4 words (binary/ AAA) with var/reg (4 programs)

6. Addition, subtraction, operands, results as packed BCD byte, multiple bytes (2 programs)

    a. Addition, subtraction, operands, results as BCD byte
        (2 programs)

    b. Addition, subtraction, operands, results as BCD word
        (2 programs)

7. Addition, subtraction, multiplication, division, operands, result unpacked BCD, multiple bytes (4 programs)

    a. Addition, subtraction, multiplication, division, operands, result byte
        (4 programs)

    b. Addition, subtraction, multiplication, division, operands, result word (4 programs)

8. Convert packed BCD to unpacked BCD, wise versa. (2 programs)

9. Sequential search.   (1 program)

10. Bubble sort (simple sorting method)   (1 program)

Programs with / with out input and output   (Total 7 programs)

1. String operations with Input and Output   (3 programs)

    a. Copying a string to another (strcpy),

    b. Concatenation of two strings (strcat)

    c. Finding index of string in another

2. Factorial of a positive integer   (1 program)

3. Factorial of a positive integer   (3 programs)

    a. Iterative procedure, returning result through, a register, address

    b. Recursive procedure, returning result through an address

II. Interfacing :

1. 1ADC Interface

2. DAC Interface

3. Traffic Controller Interface

4. Elevator Interface

Optional Programs:

Programs with / with out input and output

1. Binary search.

2. Selection, insert sort (simple sorting methods)

3. Merge, heap, quick sort (advanced sorting method)

4. Matrix addition, transpose, multiplication

Programs with input and output (repetition of old programs)

1. Operands, result a byte, with Input and output

    a. unsigned multiplication

    i. Only decimal values

    i. Both decimal and hexadecimal values

    b. signed multiplication, with sign (- symbol)

    i. Only decimal values

    ii. Both decimal and hexadecimal values

2. String operations with Input and Output

    a. Insert, delete operations on strings

    b. Block copy (with / with out overlapping regions)

OBJECT ORIENTED ANALYSIS AND DESIGN
(COMMON TO CSE & IT)

III Year B.Tech. - IT II- Sem.   **L   T/P/D   C**

                                         4   1/-/-   4

Objectives:

- ➢ To study the software complexity, structure of complex systems, to learn about object models, encapsulation, polymorphism and UML architecture.
- ➢ To learn the dynamic nature of an element i.e. behavioral modeling.
- ➢ To study about architectural modeling i.e. the set of significant decisions about the organization of a software system
- ➢ Case studies regarding different applications.

Outcomes:

- ➢ Students learn the basic things of object oriented models.
- ➢ Students are made aware of the basic contents of UML.
- ➢ Students learn the core part of UML to make them aware of the application part of it.
- ➢ Students will be able to perform software analysis and design and record the results using UML notation.

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. Design class diagram for Library information system.

UNIT- III

Basic Behavioral Modeling-I : Interactions, Interaction diagrams.

Basic Behavioral Modeling-II : Use cases, Use case Diagrams, Activity Diagrams. Design Usecases,Usecase diagrams, Interaction diagram and Activity diagram for library system.

UNIT - IV

Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams. Design State machine for different objects in library system

UNIT-V

Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams. Design & document of library system.

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.

MANAGEMENT SCIENCE
(COMMON TO ALL)

III Year B.Tech. - IT II- Sem.   **L   T/P/D   C**

                                            3   1/-/-   3

Objective :

To familiarize with the process of management and to provide basic insights into select contemporary management practices.

Outcome:

The candidate would be in a position to suggest appropriate solution for the business decision making problem

UNIT-1 INTRODUCTION TO MANAGEMENT

Introduction to Management: Concepts of Management and organization – nature, importance and Functions of Management, Taylor's Scientific Management Theory. Fayol's Principles of Management, Maslow's Theory of Human Needs, Douglas McGregor's Theory X and Theory Y, Herzberg's Two-Factor Theory of Motivation, Systems Approach to Management, Leadership Styles, Corporate Social Responsibility.

UNIT-II   STRATEGY & ORGANISATION STRUCTURE

Strategic Management: Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, SWOT Analysis.

Organisational Structures: Basic concepts related to Organisation – Departmentation and Decentralisation, Types of Mechanistic and organic structures of organisation (Line organization, Line and Staff organisation, functional organization, Committee organisation, Matrix organisation, Virtual Organisation, Cellular organisation, team structure, boundaryless organisation, Inverted Pyramid structure, Lean and Flat organisation structure) and their merits , demerits and suitability.

UNIT-III   HUMAN RESOURCE MANAGEMENT

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, Employee Engagement, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Grievance Handling and Welfare Administration. Job Evaluation and Merit Rating.

UNIT- IV OPERATIONS MANAGEMENT

Operations 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 : X Chart, R chart, C chart, P chart, (Simple Problems).

Materials Management: Objectives, Need for Inventory control, EOQ, ABC Analysis.

Project Management (PERT/CPM): Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method(CPM) (Simple Problems).

Marketing: Functions of Marketing, Marketing Mix, Marketing Strategies based on Product Life Cycle, Channels of Distribution, Retailing & Branding.

UNIT- V   CONTEMPORARY MANAGEMENT PRACTICES

Contemporary Management Practices : Basic Concepts of Just-in-time (JIT) System, Capability Maturity Model (CMM) Levels, Value Chain Analysis, Enterprise Resource Planning (ERP), Performance Management, Business Process Outsourcing (BPO), Business Process Re-engineering, Supply Chain Management, Total Quality Management, Six Sigma, CRM, Bench Marking & Balanced Score Card.

Text book

1.   Management Science – A R Aryasri

References

1.   Management - Stoner, Freemen & Gilberth

2.   Industrial Engineering & Management Science – T.R. Banga & Sharma

3.   Marketing Management – Kotler Philip & Keller Kevin

4.   Human Resource Management – K. Aswathappa

5.   Principles of Management – Koontz, Weihrich & Aryasri

6.   PERT / CPM – L.S. Srinath

7.   Management – VSP Rao & Gangadhar Rao

8.   Production and Operations Management – SN Chary

DATA WAREHOUSING AND DATA MINING
(COMMON TO CSE & IT)

III Year B.Tech. - IT II- Sem.   **L**   **T/P/D**   **C**

                                         4   **1/-/-**   **4**

Objectives:

- ➢ Understand the fundamental processes, concepts and techniques of data mining and develop an appreciation for the inherent complexity of the data-mining task.
- ➢ Characterize the kinds of patterns that can be discovered by association rule mining.
- ➢ Evaluate methodological issues underlying the effective application of data mining.
- ➢ Advance research skills through the investigation of data-mining literature.

Outcomes:

- ➢ Acquire knowledge about different data mining models and techniques.
- ➢ Explore various Data mining and data warehousing application areas.
- ➢ Demonstrate an appreciation of the importance of paradigms from the fields of Artificial Intelligence and Machine Learning to data mining.

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: Attribute-Oriented Induction.

Mining Frequent Patterns, Associations and Correlations: Basic Concepts, Efficient and Scalable Frequent Item set Mining Methods, Mining various

kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint-Based Association Mining

UNIT III

Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by Back-propagation, Support Vector Machines, Associative Classification, Lazy Learners, Other Classification Methods, Prediction, Accuracy and Error measures. Evaluating the accuracy of a Classifier or a Predictor, Ensemble Methods

Cluster Analysis I: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods

UNIT IV

Cluster Analysis II: Hierarchical Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis

Mining Streams, Time Series and Sequence Data: Mining Data Streams, Mining Time-Series Data, Mining Sequence Patterns in Transactional Databases, Mining Sequence Patterns in Biological Data. Graph Mining, Social Network Analysis and Multirelational Data Mining

UNIT V

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. **Applications and Trends in Data Mining:** Data Mining Applications, Data Mining System Products and Research Prototypes. Additional Themes on Data Mining and Social Impacts of Data Mining.

TEXT BOOKS:

1. Data Mining-Concepts and Techniques -Jiawei Han & Michel Kamber. Morten Publisher 2nd Edition, 2006.

REFERENCE BOOKS:

1. Data Mining Introductory and advanced topics -Margaret H Dunham. Pearson education.

2. Data Mining Techniques - Arun K Pujari. University Press.

WEB APPLICATION DEVELOPMENT

III Year B.Tech. - IT II- Sem.	L	T/P/D	C
	4	1/-/-	4

Objectives:

➢ Learning to create applications using ASP.NET

➢ Learning to create event driven programs.

➢ Learning to data access controls and manipulation.

Outcomes:

➢ Develop applications and deploy it to web server for commercial use.

➢ Write application for dynamic content generation using databases.

➢ Understand the architecture behind .NET and how ti use the various controls.

UNIT – I

INTRODUCING ASP IN .NET PLATFORM: The .NET Framework, Learning .NET Languages, Data Types, Declarations, Scope and Accessibility of variables, Objects and Name spaces, Setting up ASP.NET and IIS.

UNIT – II

ASP.NET Applications: ASP.NET Applications, Code behind, Global.asax application file, Understanding ASP.NET classes, ASP.NET configuration.

WEB Fundamentals: A simple page applet, Currency converter applications, HTML control classes, Page classes, Accessing HTML server controls.

WEB controls: Setting up web control classes, Auto post back and web control events, Web page applet.

UNIT - III

Using Visual Studio .NET- starting a project, web form designer, coding and debugging. Validations and Rich Controls, Validations, Validations using of Regular expression, Example program.

State Management : Problem of state, View state, transferring information, custom cookies, session state and its configuration. Error handling and page tracing

UNIT - IV

ADO.NET : Overview, characteristics of ADO.NET, ADO.NET object model, ADO.NET Data access-SQL Basics and statements for creation, updating, inserting, deleting data, Data binding – Single, repeated value data binding and data binding with databases, Data List, Data Grid, Repeater.

UNIT - V

Web services: Web service architecture Internet programming Then and Now, WSDL, SOAP, communicating with web service, web service discovery and UDDI, Creating- Basics, understanding and documenting, Using Web services- Consuming a web service, using the Proxy class, Example with TerraService, Windows Clients

Text Book

1. MacDonald, The complete reference ASP.NET, Tata McGraw-Hill, New Delhi, India.

References

1. Jesse Liberty, Dan Maharry, Dan Hurwitz, Programming ASP.NET 3.5, ORELLY publishers.
2. Jason N Gaylord, Christian Wenz, Pranav Rastogi, Todd Miranda, Scott Hanselman, "Professional ASP.NET 4.5 in C# and VB", Wrox publishers.

AUTOMATA AND COMPILER DESIGN

III Year B.Tech. - IT II- Sem.	L	T/P/D	C
	4	1/-/-	4

Objectives:

- ➢ To introduce various phases of compiler design.
- ➢ To introduce the major concept areas of language translation and compiler design
- ➢ To develop an awareness of the function and complexity of modern compilers.
- ➢ Recognize the underlying formal models such as finite state automata, push-down automata and their connection to language definition through regular expressions and grammars.
- ➢ Discuss the effectiveness of optimization.

Outcomes:

- ➢ have a concrete view on the theoretical and practical aspects of compiler design
- ➢ apply ideas and techniques discussed to various software design
- ➢ understand the different phases of compiler construction and how compilers can be optimized
- ➢ Working skills in theory and application of finite state machines, recursive descent, production rules, parsing, and language semantics.

Unit-I:

Formal Languages and Regular Expressions: Languages, Regular Expressions(RE),Specification and recognition of tokens, Input Buffering, Language specifying Lexical Analyzer, Finite automata-NFA,DFA,RE to NFA conversion, RE to DFA conversion, NFA to DFA conversion, Minimization of DFA

Unit-II:

Compilers and Translators, Interpreters, Structure of a compiler, Cross compilers, different phases of a compiler, compiler construction tools, bootstrapping, Lexical Analysis—Role of a Lexical Analyzer, Lex Tool

Unit-III:

Syntax Analysis: Role of parser, Chomsky hierarchy of languages and recognizers, context free grammars, derivations, parse trees, ambiguity, LL(K) grammars, LL(1) parisng

Bottom up parsing: Handle pruning, LR grammar parsing, LALR parsing, Parsing ambiguous grammars, Yacc Programming specification

Unit-IV:

Semantic Analysis: Syntax directed translation, S-attributred and L-attributed grammars, Intermediate code-abstract syntax tree, translation of simple statements and control flow statements

Context sensitive Features: Type checking, type conversions, equivalence of type expressions, overloading of functions and operations

Unit-V:

Runtime Storage: Storage Organization, storage allocation strategies, scope access to nonlocal names, parameters, language facilities for dynamic storage allocation

Code Optimization and Generation: Macine dependent code generation, object code forms, generic code generation algorithm, register allocation and assignment, using DAG representation of a block

TEXT BOOKS:

1. Introduction to Theory of computation.Sipser,2nd Edition, Thomson.
2. Compilers Principles, Techniques and Tools Aho, Ullman, Monica S.Lam, Ravisethi, Pearson Education.

REFERENCES :

1. Modern Compiler Construction in C, Andrew W. Appel Cambridge University Press.
2. Principles of Compiler Design, V. Raghavan, TMH.
3. Introduction to Formal Languages and Automata Theory and Computation- Kamala Krithivasan and Rama R, Pearson.

ADVANCED ENGLISH COMMUNICATION SKILLS LAB
(COMMON TO ALL)

III Year B.Tech. - IT II- Sem.   **L   T/P/D   C**

                                                0   -/3/-   2

The Advanced English Communication Skills lab focuses on the career planning, professional skills and interpersonal communication skills in the globalised context.

Objectives

> ➤ To improve the students' fluency in English, through well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.

> ➤ To enable the professional students to communicate their ideas relevantly and coherently both in writing and speaking.

Outcome:

The candidate would be in a position to communicate both in writing and speaking critically and intelligibly with appropriate use of vocabulary and grammatical structures.

Syllabus

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

1. Functional English – starting a conversation – responding appropriately and relevantly – using the right body language – role play in different situations.

2. Vocabulary Building – synonyms and antonyms, word roots, one-word substitutes, prefixes and suffixes, study of word origin, analogy, idioms and phrases.

3. Listening Skills – Purpose of listening – Types of listening – Barriers to listening – Sub Skills of listening – Tips for being a good listener

4. Reading Comprehension – reading for facts, guessing meanings from context, scanning, skimming, inferring meaning, critical reading.

5. Writing Skills – structure and presentation of different types of writing – Resume writing/e-correspondence/ Technical report writing/Portfolio writing/Mind-mapping - planning for writing – research abilities/data collection/ organizing data/tools/analysis – improving one's writing.

6. Group Discussion – dynamics of group discussion, intervention, summarizing, modulation of voice, body language, relevance, fluency and coherence.

7. Presentation Skills – Oral presentation (individual and group) through JAM sessions/seminars and written presentations through posters/ projects/reports/PPTs/e-mails/mind maps/assignments etc.

8.   Interview Skills – concept and process, pre-interview through tele and video-conferencing.

Minimum Requirement

The Advanced English Communication Skills Lab shall have an integrated Multi Media resources: 20 Multi media systems, with movable chairs and audio-visual aids with a P.A System, a Multimedia Projector, a digital stereo –audio & video system and camcorder.

System Requirement (Hardware component)

Computer network with Lan with minimum 30 multimedia systems with the following specifications:

  i)   CPU Requirements

  a)   Duel Core Processor

  b)   Speed – 2.8 GHZ

  c)   RAM – 1 GB Minimum

  d)   Hard Disk – 80 GB Minimum

  e)   DVD ROM Drive

  ii) Headphones of High quality

Suggested Software

- *Oxford Advanced Learner's Compass*, 7th Edition.

- *DELTA's key to the Next Generation TOEFL Test:* Advanced Skill Practice.

- *English in Mind*, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge University Press.

- *Job Hunting* by Colm Downes with CD, Cambridge University Press 2008.

- *Business Vocabulary in Use* – Elementary to Intermediate with CDs, Cambridge University Press.

References

1. *Soft Skills: Know Yourself and Know the World*, Dr.K.Alex. S.Chand & Company Ltd.

2. *Group Discussion and Interview Skills* with VCD, Priyadarshi Patnaik, Foundation Books.

3. *Communication Skills for Engineers and Scientists*, Sangeeta Sharma & Binod Mishra, PHI Learning Private Limited.

4. **Critical Reasoning, Acedemic Writing and Presentation Skills,** Marilyn Anderson, Pramod K.Nayar and Madhucchanda Sen, Pearson Publishers.

5. Soft skills : Know yourself and know the world by *Dr. K. Alex*, S. Chand & Co., Ltd.

DISTRIBUTION AND WEIGHTAGE OF MARKS

Advanced English Language Laboratory Practical Paper:

1. The practical examinations for the English Language Laboratory shall be conducted as per the norms stipulated for the core engineering practical sessions.

2. For the Language lab sessions, there shall be a continuous evaluation during the semester for 25 sessional marks and 50 year-end Examination marks. Of the 25 marks, 15 marks shall be awarded for day-to-day work and 10 marks to be awarded by conducting Internal Lab Test(s). The year- end Examination shall be conducted by the teacher concerned with an external examiner from the other Universities or colleges.

WEB APPLICATION DEVELOPMENT LAB

III Year B.Tech. - IT II- Sem.   **L   T/P/D   C**

                                        0   -/3/-   2

List of Programs

1. Write a program to implement string manipulation.
2. Write a program for small application that uses build in function.
3. Write a program to implement class concept.
4. Write a program to implement inheritance.
5. Write a program to implement polymorphism.
6. Write a program to create a web application.
7. Write a program to create page applet using controls.
8. Write a program to implement AutoPostBack and Web control events.
9. Write a program to implement handle errors.
10. Develop a simple application to implement student information managements system **or** Library management system **or** Super market auto billing management system
11. Develop a simple application where a windows client can interact with a web service.

CN AND OOAD LAB

III Year B.Tech. - IT II- Sem.   **L   T/P/D   C**

                                                       0   -/3/-   2

Computer Networks Lab:

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 computer 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.

OBJECT ORIENTED ANALYSIS AND DESIGN LAB (UML Lab):

Objectives:

Main objective of this lab is to enable the student to practice the object-oriented analysis and design through UML on a particular application (project) so that he will apply same methodology in mini project which has to be done in final year. And also it will give exposure to tools that support UML and Object oriented software development.

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

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

NOTE: The analysis, design, coding, documentation, database design of mini project which will be carried out in 4th year should be done in object-oriented approach using UML and by using appropriate software which supports UML, otherwise the mini project will not be evaluated.

TEXT BOOKS:

1. Computer Networks — Andrew S Tanenbaum, 5th Edition. Pearson Education/PHI

SOFTWARE TESTING METHODOLOGIES
(COMMON TO CSE,IT)

IV Year B.Tech. - IT I- Sem.	L	T/P/D	C
	3	1/-/-	3

Objectives:

➢ To learn various software testing techniques and solutions in software like unit test; integration, regression, and system testing.

➢ To learn how to write software testing documents, and communicate with engineers in various forms.

➢ Know a variety of structural and functional testing techniques.

➢ To gain overview of usage of software testing tools to test softwareprojects.

➢ To understand the relationship between testing, software quality and other verification techniques.

Outcomes:

➢ Understand terminology of software testing.

➢ Have an ability to understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.

➢ Have an ability to apply software testing methods and software testing tools for software projects.

UNIT-I:

Introduction:- Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs. Flow graphs and Path testing:- Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.

UNIT-II:

Transaction Flow Testing:-Transaction flows, transaction flow testing techniques. Dataflow testing:- Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

UNIT-III:

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

Paths, Path products and Regular expressions:- Path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.

UNIT-IV:

Logic Based Testing:- overview, decision tables, path expressions, kv charts, specifications. State, State Graphs and Transition testing:- state graphs, good & bad state graphs, state testing, Testability tips.

UNIT-V:

Graph Matrices and Application:- Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools. (Student should be given an exposure to a tool like JMeter or Win-runner).

TEXT BOOKS:

1. Software Testing techniques - Boris Beizer, Dreamtech, second edition.
2. Software Testing Tools - Dr.K. V.K.K.Prasad, Dreamtech

REFERENCE BOOKS:

1. Effective methods of Software Testing, Perry, John Wiley,2nd Edition 1999.
2. The craft of software testing - Brian Marick, Pearson Education.

NETWORK SECURITY
(COMMON TO CSE & IT)

IV Year B.Tech. - IT I- Sem.　　　　　　　　　L　T/P/D　C

　　　　　　　　　　　　　　　　　　　　　　　　　4　1/-/-　4

Objectives:

- ➢ Understand network security threats, security services, and countermeasures.
- ➢ Learn fundamentals of cryptography and its application to network security.
- ➢ Acquire background on well known network security protocols such as IPSec, SSL,SET.
- ➢ Understand vulnerability analysis of network security.
- ➢ Acquire background on Digital Signature; authentication; firewalls; intrusion detection techniques.

Outcomes:

- ➢ Identify network security threats and determine efforts to counter them.
- ➢ Write code for relevant cryptographic algorithms.
- ➢ Understand the functions of Kerberos,X.509.
- ➢ Understand the requirements of SMTP.
- ➢ Understand firewall requirements, Design principles.

UNIT I:

Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs. Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.

UNIT II:

Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution. Approaches of Message Authentication, Secure Hash Functions and HMAC. Introduction to number theory concepts: Prime Numbers, Euler's theorem, Discrete Logarithms. Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management

UNIT III:

Kerberos, X.509 Directory Authentication Service. Email privacy: Pretty Good Privacy (PGP) and S/MIME.

UNIT IV:

IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management.

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

UNIT V:

Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3. Intruders, Viruses and related threats. Firewall Design principles, Trusted Systems. Intrusion Detection Systems.

TEXT BOOKS:

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

2. Hack Proofing your network by Ryan Russell, Dan Kaminsky, Rain Forest Puppy, Joe Grand, David Ahmad, Hal Flynn Ido Dubrawsky, Steve W.Manzuik and Ryan Permeh, Wiley   Dreamtech

REFERENCE BOOKS:

1. Cryptography and network Security, Third edition, Stallings, PHI/ Pearson

2. Cryptography and Network Security Second Edition Behrouz Forouzan

MOBILE APPLICATION DEVELOPMENT

IV Year B.Tech. - IT I- Sem.	L	T/P/D	C
	4	1/-/-	4

Objectives:

- ➢ Understanding the environment of small computing devices
- ➢ Develop basic applications using MIDlet
- ➢ Understanding various kinds of user interface elements
- ➢ Concepts related to Record management Systems
- ➢ TO learn API related to socket programming

Outcomes:

- ➢ Should be able to understand restrictions of small computing devices
- ➢ Should be able to write MIdlets
- ➢ Should be able to develop simple user interfaces
- ➢ Should be able to manage the data using RMS
- ➢ Should be able to write clie/server apps using socket API

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

Unit II:

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 III:

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 IV:

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

Unit V:

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

TEXTBOOK

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

REFERENCEBOOKS

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

NETWORK PROGRAMMING

IV Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                                           4   1/-/-   4

Objectives:

> ➢ to make student understand what is Inter Process Communication and what are various features(facilities) provided(available) in UNIX environment to perform Inter Process Communication among processes with in a machine and processes on different machines connected through network

Outcomes:

> ➢ Students could be able to design and implement network Client-Server applications

UNIT-I

Inter Process Communication: Introduction, File and record locking, Pipes, FIFOs streams and messages, Name spaces, System V IPC, Message Queues, Semaphores.

Introduction to Network Programming: OSI model, UNIX standards, TCP and UDP & TCP Connection Establishment and Termination, Port Numbers. Buffer Sizes and Limitations, Standard Internet Services, Protocol Usage by Common Internet Application.

UNIT-II

Sockets : Introduction, Socket Address structures, Value – Result Arguments, Byte Ordering and Manipulation functions and related functions. **Elementary TCP sockets** – Socket, connect, bind, listen, accept, fork and exec function, Concurrent servers. close Function and related Functions.

TCP Client-Server: Introduction, TCP Echo server functions, Normal startup, termination and signal handling. Termination of Server Process. Crashing and Rebooting of Server Host, Shutdown of Server Host.

UNIT-III

I/O Multiplexing: I/O Models, select function, Batch input, shutdown function, poll function, TCP Echo server.

Socket Options - getsockopt and setsockopt functions. Socket states, Generic Socket Options, IPV4 Socket Options, ICMPV6 Socket Option, IPV6 Socket Options, and TCP Socket Options.

UNIT-IV

Elementary UDP sockets: Introduction, UDP Echo Server functions, Lost Datagrams. Summary of UDP example, Lack of Flow Control with UDP, Determining Outgoing interface with UDP.

UNIT-V

Elementary name and Address conversions: Introduction, Domain Name System, gethostbyname function, Resolver Option, Function and IPV6 support, uname function, other Networking Information.

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

INFORMATION RETRIEVAL SYSTEMS
(ELECTIVE - I)
(COMMON TO CSE, IT)

IV Year B.Tech. - IT I- Sem.	L	T/P/D	C
	3	1/-/-	3

Objectives:

➢ To learn standard concepts in information retrieval such as documents, queries, collections, and relevance.

➢ Efficient indexing, to allow for the quick identification of candidate answer documents

➢ Election of application areas such as music search, document summarization, cross-lingual retrieval, and image retrieval.

Outcomes:

➢ Use different information retrieval techniques in various application areas

➢ Apply IR principles to locate relevant information large collections of data

➢ Analyze performance of retrieval systems when dealing with unmanaged data sources

➢ Implement retrieval systems for web search tasks.

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 Retrival By Yates Pearson Education.

3. Information Storage & Retieval By Robert Korfhage – John Wiley & Sons.

ARTIFICIAL INTELLIGENCE
(ELECTIVE - I)

IV Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                             3   1/-/-   3

Objectives :

This course is designed :

- ➢ To understand about the achievements of AI and the theory underlying those achievements.
- ➢ To have an appreciation for the engineering issues in the design of AI systems.
- ➢ To acquire knowledge on the issues of knowledge representation and searching methods.

Outcomes :

Students will poses:

- ➢ An ability to design appropriate problem-solving and knowledge-representation techniques in AI.
- ➢ An ability to analyze to design the problems using the concepts of AI models.

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, Depth limited search, Iterative deepening depth first search bi-direction search - comparison. Search with partial information (Heuristic search) Greedy best first search, A* search, Memory bounded heuristic search, Heuristic functions.

Local search Algorithms, Hill climbing, simulated, annealing search, local beam search, genetical algorithms.

Constrain satisfaction problems: Backtracking search for CSPs local search for constraint satisfaction problems.

UNIT-III

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

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

UNIT-IV

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

Planning: Classical planning problem, Language of planning problems, Expressiveness and extension, planning with state – space search, Forward states spare search, Backward states space search, Heuristics for stats space search. Planning search, planning with state space search, partial order planning Graphs.

UNIT-V

Learning: Forms of learning, Induction learning, Learning Decision Tree, Statistical learning methods, learning with complex data, learning with Hidden variables – The EM Algorithm, Instance Based learning, Neural Networks.

Text Books:

1. Artificial Intelligence – A Modern Approach. Second Edition, Stuart Russel, Peter Norvig, PHI/Pearson Education.

2. Artificial Intelligence, 3rd Edition, Patrick Henry Winston., Pearson Edition,

Reference:

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

EMBEDDED SYSTEMS
(ELECTIVE I)
(COMMON TO CSE & IT)

IV Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                                     3   1/-/-   3

Objectives: is to prepare students

> ➢ With a comprehensive understanding of the hardware and software technologies used in embedded systems.

> ➢ The programme strives to seek a balance between the software and hardware aspects of embedded systems and focuses on dependable systems for embedded control application.

> ➢ To learn the Real Time Operating System concepts in Embedded System

Outcomes:

> ➢ Understand and design of Embedded System using 8051 microcontroller and a Real Time Operating System

For Embedded System using 8051

> ➢ Understands the architecture and instruction set of 8051 microcontroller

> ➢ Interface peripherals & I/O Devices to a microcontroller

> ➢ write programs in 8051 assembly language

For Embedded System using RTOS

> ➢ Able to understand the services provided and the features existing in an Real Time Operating System

> ➢ Knows about various software development, testing and debugging tools helpful in implementing an Embedded System.

Unit - I

Embedded Computing : Introduction, Complex Systems and Microprocessor, The Embedded System Design Process. (**Chapter I from Text Book 1, Wolf**).

The 8051 Architecture : Introduction, 8051 Micro controller Hardware, Input/Output Ports and Circuits, External Memory, Counters and Timers, Serial data Input/Output, Interrupts. (**Chapter 3 from Text Book 2, Ayala**).

Unit - II

Basic Assembly Language Programming Concepts : The Assembly Language Programming Process, Programming Tools and Techniques, Programming

the 8051. Data Transfer and Logical Instructions.(**Chapters 4,5 and 6 from Text Book 2, Ayala**).

Arithmetic Operations, Decimal Arithmetic. Jump and Call Instructions, Further Details on Interrupts. (**Chapter 7and 8 from Text Book 2, Ayala**)

Unit - III

Applications : Interfacing with Keyboards, Displays, D/A and A/D Conversions, Multiple Interrupts, Serial Data Communication. (**Chapter 10 and 11 from Text Book 2, Ayala**).

Survey of Software Architecture: Round-Robin, Round-Robin with interrupts, Function-Queue Scheduling Architecture, Real-Time Operating System Architecture, Selecting an Architecture.

Introduction to Real – Time Operating Systems: Tasks and Task States, Tasks and Data, Semaphores, and Shared Data; Message Queues, Mailboxes and Pipes, Timer Functions, Events, Memory Management,Interrupt Routines in an RTOS Environment. (**Chapter 5, 6 and 7 from Text Book 3, Simon**).

Unit - IV

Basic Design Using a Real-Time Operating System : Principles, Semaphores and Queues, Hard Real-Time Scheduling Considerations, Saving Memory and Power, An example RTOS like µC-OS (Open Source); Embedded Software Development Tools: Host and Target machines, Linker/Locators for Embedded Software, Getting Embedded Software into the Target System; Debugging Techniques: Testing on Host Machine, Using Laboratory Tools. (Chapter 8,9,& 10 from Text Book 3, Simon).

Unit - V

Introduction to advanced architectures : ARM Processor:Processor and Memory Organization,Data Operations,Flow of Control .**SHARC, Processor** : memory organization,Data operations,Flow of Control, parallelism within Instruction; Networked embedded systems: Bus protocols, I^{2}C bus and CAN bus; Internet-Enabled Systems. (**Chapter 8 from Text Book 1, Wolf**).

TEXT BOOKS :

1. Computers as Components-principles of Embedded computer system design, Wayne Wolf, Elseveir.
2. The 8051 Microcontroller, Third Edition, Kenneth J.Ayala, Thomson.
3. An Embedded Software Primer, David E. Simon, Pearson Education.

REFERENCES :

1. Embedded system building blocks, Labrosse, via CMP publishers.
2. Embedded Systems, Raj Kamal, TMH.
3. Micro Controllers, Ajay V Deshmukhi, TMH.

SEMANTIC WEB & SOCIAL NETWORKS
(ELECTIVE-I)
(COMMON TO CSE & IT)

IV Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                                          3   1/-/-   3

Objectives:

➢ Explains the features, rationale, and advantages of Semantic Web technology. And Analyze the requirements and features of web ontology language (OWL).

➢ Explain the concepts of graph-based RDF model, XML syntax-based RDF model, and RDF Schema.

➢ Analyze application cases in data integration, data exchange, knowledge management, e-learning, and web services

➢ Discuss the methodologies in ontology engineering and research issues in Semantic Web technology.

Outcomes:

➢ Understand the concept structure of the semantic web technology and how this technology revolutionizes the World Wide Web and its uses.

➢ Describe logic semantics and inference with OWL.

➢ Use ontology engineering approaches in semantic applications and Program semantic applications.

➢ Can show skills in analysis of social networks and its implementation.

UNIT I:

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 Road map, Logic on the semantic Web.

UNIT II:

Ontologies and their role in the semantic web, Ontologies Languages for the Semantic Web-Resource Description Framework (RDF)/RDS Schema, Ontology Web Language (OWL), UML, XML/XML Schema. Ontology Engineering, Constructing Ontology, Ontology Development Tools, Ontology Methods, Ontology Sharing and Merging, Ontology Libraries and Ontology Mapping.

UNIT III:

Logic, Rules and Inference Engines, Semantic Web applications and services, Semantic Search, e-learning, Semantic Bioinformatics, Knowledge Base.

UNIT IV:

XML Based Web Services, Creating an OWL-S Ontology for Web Services, Semantic Search Technology, Web Search Agents and Semantic Methods.

UNIT V:

What is social Networks analysis, development of the social networks analysis, Electronic Sources for Network Analysis – Electronic Discussion networks

Blogs and Online Communities, Web Based Networks, Building Semantic Web Applications with social networks features, Wiki, open Wiki.

TEXT BOOKS:

1.   Thinking on the Web-Berners Lee, Godel and Turing, Wiley Interscience, 2008.

2.   Social Networks and the Semantic Web Peter Mika, Springer 2007.

REFERENCE BOOKS:

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 Champan and Hall/CRC Publishers (Taylor & Fancis Group)

3.   Information Sharing on the semantic Web – Heiner Stuckenschmidt; Frank Van Harmelen, Springer Publications.

DISTRIBUTED SYSTEMS
(ELECTIVE -II)

IV Year B.Tech. - IT I- Sem.　　　　　　　　　**L　T/P/D　C**

　　　　　　　　　　　　　　　　　　　　　　　3　1/-/-　3

Objectives:

- ➢ Primary goal is to gain an understanding of the principles and techniques behind the design of distributed systems, such as locking, concurrency, scheduling, and communication across the network.
- ➢ Secondly to gain practical experience designing, implementing, and debugging real distributed systems.
- ➢ The major themes of the course is to teach about scarcity, scheduling, concurrency and concurrent programming, naming, abstraction and modularity, imperfect communication and other types of failure, protection from accidental and malicious harm, optimism, and the use of instrumentation and monitoring and debugging tools in problem solving.

Outcomes:

- ➢ Implement and structure distributed systems programs.
- ➢ Write programs that can interoperate using well-defined protocols.
- ➢ Debug highly concurrent code that spans multiple programs running on multiple cores and machines.
- ➢ Reason about distributed algorithms for locking, synchronizationa and concurrency, scheduling, and replication.
- ➢ Use standard network communication primitives such as UDP and TCP.

UNIT –I:

Characterization of Distributed Systems-Introduction. Examples of Distributed systems, Resource sharing and web, challenges, System models-Introduction, Architectural and Fundamental models, Networking and Internetworking, Inter process Communication.

UNIT –II:

Distributed objects and Remote Invocation - Introduction, Communication between distributed objects, RPC .Events and notifications, Case study-Java RMI.

Operating System Support- Introduction, OS layer, Protection, Processes and Threads, Communication and Invocation, Operating system architecture,

Security-Introduction, Overview of Security techniques, Cryptographic algorithms, Digital signatures, Case studies- Needham- Schroeber, Kerberos.

UNIT-III:

Distributed File Systems-Introduction, File Service architecture, case study-SUN network file systems.

Name Services-Introduction, Name Services and the Domain Name System, Case study of the Global Name Service, Case study of the X.500 Directory Service.

Time and Global States-Introduction, Clocks, events and Process states, Synchronizing physical clocks, logical time and logical clocks, global states, distributed debugging.

Coordination and Agreement - Introduction, Distributed mutual exclusion, Elections, Multicast communication, consensus and related problems.

UNIT-IV:

Transactions and Concurrency control-Introduction, Transactions, Nested Transactions, Locks, Optimistic concurrency control, Timestamp ordering, Comparison of methods for concurrency control.

Distributed Transactions-Introduction, Flat and Nested Distributed Transactions, Atomic commit protocols, Concurrency control in distributed transactions, Distributed deadlocks. Transaction recovery, Replication-Introduction, System model and group communication. Fault tolerant services, Transactions with replicated data.

UNIT-V:

Distributed shared memory-Design and Implementation issues, Sequential consistency and Ivy case study, Release consistency and Munin case study, Other consistency models.

CORBA case study-Introduction, CORBA RMI,CORB A Services.

TEXTBOOKS:

1. Distributed Systems Concepts and Design, G Coulouris, J Dollimore and T Kindberg, Fourth Edition, Pearson Education.

REFERENCE BOOKS:

1. Advanced Concepts in Operating Systems, M Singhal, N G Shivarathri, Tata McGraw-Hill Edition.
2. Distributed Systems - Principles and Paradigms, A.S. Tanenbaum and M.V. Steen, Pearson Education.
3. Distributed Operating Systems, A.S.Tanenbaum, Pearson education.

VLSI DESIGN
(ELECTIVE -II)
(COMMON TO ECE, ETM, EEE, ICE, IT)

IV Year B.Tech. - IT I- Sem.   L   T/P/D   C

                                3   1/-/-   3

Objectives:

➢ The goal of the course is to introduce design concepts and Architecture underlying modern complex VLSI and system-on-chip.

➢ The course main objective is to introduce the fundamental principles of VLSI Circuit design and layout and to cover the basic building blocks of large scale CMOS digital Integrated circuits.

➢ It also describes the general steps required for processing of CMOS Integrated circuits and to design functional units.

Outcomes:

➢ Students will be able to understand the operation of a MOS transistor, down to physical level and relate the knowledge to the development of its operational equations, will be able to analyze and implement various logic gates and circuits using MOS Transistors, will be able to design circuit components and verify their performance using simulation tools, to design static CMOS Combinational and Sequential logic at the transistor level, including mask layout, will be able to implement designs with FPGA devices and CPLD'S.

Unit I: Introduction

Introduction to IC Technology: MOS, PMOS, NMOS,CMOS & BiCMOS fabrication

Technologies, fabrication processes: Oxidation, Lithography, Diffusion, Ion implantation, Metallization, Etching, Planarization, Encapsulation, Integrated Resistors and Capacitors, CMOS Nanotechnology.

Unit II: Basic Electrical Properties

Basic Electrical Properties of MOS and BiCMOS Circuits: Ids-Vds relationships, MOS transistor threshold Voltage Vt, gm, gds, Figure of merit ùo; Pass transistor, NMOS Inverter, Various pull ups, CMOS Inverter - analysis and design, BiCMOS Inverters.

VLSI Circuit Design Processes:

VLSI Design Flow, MOS Layers, Stick Diagrams, Design Rules and Layout, 2 ìm CMOS Design rules for wires, contacts and Transistors, Layout Diagrams for NMOS and CMOS Inverters and Gates, Scaling of MOS circuits.

Unit III: Gate Level Design

Logic Gates and Other complex gates, Switch logic, Alternate gate circuits, Time delays, Driving large capacitive loads, Wiring capacitance, Fan–in, Fan–out, Choice of layers.

Data path Subsystems:

Subsystem Design, Shifters, Adders, ALUs, Multipliers, Parity generators, Comparators, Zero/One Detectors, Counters.

Unit IV:Array Subsystems

SRAM, DRAM, ROM, Serial Access Memories, Content Addressable Memory.

Semiconductor Integrated Circuit Design:

PLAs, Programmable Array Logic, FPGAs, CPLDs, Standard Cells, Design Approach, Introduction to low power design.

Unit V: CMOS Testing

CMOS Testing, Need for testing, Test Principles, Wafer-level, package-level testing, System-level Test Techniques, Layout Design for improved Testability, Principles of Design for testability (DFT).

Text Books:

1. Essentials of VLSI circuits and systems – Kamran Eshraghian, Douglas A. Pucknell, Sholeh Eshraghian, PHI, 2005 Edition
2. VLSI Designing- K .Lal Kishore, V. S. V. Prabhakar, I.K International, 2009.
3. CMOS VLSI Design – A circuits and systems perspective, Neil H. E Weste, David Harris, Ayan Banerjee, Pearson, 2009.

References:

1. CMOS logic circuit Design - John .P. Uyemura, Springer, 2007.
2. Modern VLSI Design - Wayne Wolf, Pearson Education, 3rd Edition, 1997.
3. VLSI Design – A. Albert Raj, Latha, PHI, 2008

SCRIPTING LANGUAGES
(ELECTIVE -II)
(COMMON TO CSE,IT)

IV Year B.Tech. - IT I- Sem.	L	T/P/D	C
	3	1/-/-	3

Objectives

- To learn different scripting languages and typical system and application programming languages
- To write efficient programs with less concern relating to machine details.
- To provide knowledge to tie together and build on existing software.
- To increase programming productivity.

Outcomes

- Understand and explain the differences between typical scripting languages and typical system and application programming languages
- Understand the strengths, weaknesses, and applicability of scripting languages
- Code effectively using several Unix shell scripting languages, including: Perl and Python
- Write server-side scripts using Perl and Python's CGI facilities.

UNIT I: Advanced Perl

Finer Points of looping, pack and unpack, file system, eval, data structures, packages, modules, objects, interfacing to the operating system, Creating Internet ware applications, Dirty Hands Internet Programming, Security Issues.

UNIT II: PHP Basics

PHP Basics : Features, Embedding PHP Code in your Web pages, Outputting the data to the browser, Data types, Variables, Constants, expressions, string interpolation, control structures, Function, Creating a Function, Function Libraries, Arrays, strings and Regular Expressions. PHP and Web Forms, Files, PHP Authentication and Methodologies – Hard Coded, File Based Database Based, IP Based, Login Administration, Uploading Files with PHP, Sending Email using PHP, PHP Encryption Functions, the Mcrypt Package, Building Web sites for the World.

UNIT III: TCL

TCL Structure, syntax, variables and data in TCL, Control Flow, Data

Structures, Input/output, procedures, strings, patterns, files, Advance TCL – eval, source, exec and uplevel commands, Name spaces, trapping errors, event driven programs, making applications internet aware, Nuts and Bolts Internet Programming, Security Issues, C Interface.

Tk Visual Tool Kits, Fundamental Concepts of Tk, Tk by example, Events and Binding, Perl-Tk.

UNIT IV

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.

UNIT V

Power Shell : Variables, arrays, structures/classes, command line arguments, operators, input, system commands, control structures- conditions and loops

TEXT BOOKS:

1. The world of Scripting Languages, David Barron, Wiley Publications.

2. Python Web Programming, Steve Holden and David Beazley, New Riders Publications.

3. Beginning PHP and MySQL, 3rd Edition, Jason Gilmore, Apress Publications (Dream tech).

REFERENCE BOOKS:

1. Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP, J.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.

HUMAN COMPUTER INTERACTION
(ELECTIVE -II)
(COMMON TO CSE,IT)

IV Year B.Tech. - IT I- Sem.	L	T/P/D	C
	3	1/-/-	3

Objectives :

- ➢ To learn the principles and fundamentals of Human computer interaction.
- ➢ To understand contemporary theories developed for accounting HCI issues which include user behavior, cognitive, affective, interpersonal and social aspects in interaction design.
- ➢ To acquire the skill to isolate the features of an existing interface design with flaws and improve them.

Outcomes :

- ➢ Make use of the human and the Computer components functions for better implementation and evaluation of graphical user interface.
- ➢ Demonstrate Understanding of Interaction between the human and computer components.
- ➢ Use Paradigms and to Implement Interaction design basics.
- ➢ Determine the HCI methods to meet the needs of a practical software development process.

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 –

browsing and searching on web – statistical graphics and its types – Technological consideration in interface design.

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

UNIT - IV

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

Software tools – Specification methods, interface – Building Tools.

UNIT – V

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 Education.
2. Interaction Design Prece, Rogers, Sharps. Wiley Dreamtech.
3. User Interface Design, Soren Lauesen , Pearson Education.

MOBILE APPLICATION DEVELOPMENT LAB

IV Year B.Tech. - IT I- Sem.   L   T/P/D   C

                                              0   -/3/-   2

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

Week - 2 Working with J2ME Features:

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

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

- cut
- copy
- past
- delete
- select all
- unselect all
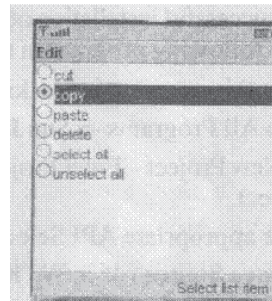
2.2 Event Handling.

Create a menu which has the following options:

- cut   - can be on/off
- copy - can be on/off

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

2.3. Input checking

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

- Area code should be one of the following: 040,041,050,0400,044
- There should 6-8 numbers in telephone number (+ area code)
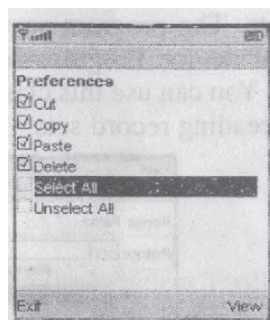
Week - 3 Threads & High Level UI:

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

3.2 High-level UI

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

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

Week - 4 Working on Drawing and Images 4.1 Create a slide show which has three slides, which includes pictures at PNG format. Program should change to the new slide other 5 seconds.

4.2 Create a MIDP application, which draws a bar graph to the display. Data values can be given at int[] array.

4.3 Create a MIDP application, which draws   ^   ~ a bar graph to the display. Data values can be given at int[] array. You can enter four data (integer) values to the input text field.

Week - 5 Developing Networked Applications using the Wireless Toolkit Creating a Simple Client-Server Application

Create, compile and run a basic UDP-based client-server application. Creating the Datagram Server project

1)   Click on Wireless Toolkit 2.5.2 under the group: All Programs' !Sun Java

(TM) Wireless Toolkit 2.5.2.

2) Click on 'New Project...' button.

3) Enter project name as 'Datagram Server'. Enter MIDlet name as 'Datagram Server'. 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 Datagram Server 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.

3) After compiling the project successfully, click on the Run button in the Wireless Toolkit window.

4) A graphical window depicting a phone handset will appear with the name of your application highlighted on its screen as shown below.

5) To start the application, click on the right soft-key (marked with a dot) below the 'Launch' command.

6) 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.

1) Keep the server running during the creation, compilation and running of the Datagram Client application.

Creating the Datagram Client 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 'Datagram Client'. Enter MIDlet name as 'Datagram Client'. 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 Datagram Client 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.

NETWORK PROGRAMMING LAB

IV Year B.Tech. - IT I- Sem.   **L   T/P/D   C**

                                               0   -/3/-   2

Objectives:

- ➢ To teach students various forms of IPC through Unix and socket Programming

Recommended Systems/Software Requirements:

- ➢ Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space LAN Connected
- ➢ Any flavour of Unix / Linux

Week1.

Implement the following forms of IPC.   a)Pipes b)FIFO

Week2.

Implement file transfer using Message Queue form of IPC

Week3.

Write a programme to create an integer variable using shared memory concept and increment the variable simultaneously by two processes. Use senphores to avoid race conditions

Week4.

Design TCP iterative Client and server application to reverse the given input sentence

Week5.

Design TCP iterative Client and server application to reverse the given input sentence

Week6.

Design TCP client and server application to transfer file

Week7.

Design a TCP concurrent server to convert a given text into upper case using multiplexing system call "select"

Week8.

Design a TCP concurrent server to echo given set of sentences using poll functions

Week9.

Design UDP Client and server application to reverse the given input sentence

Week10

Design UDP Client server to transfer a file

Week11

Design using poll client server application to multiplex TCP and UDP requests for converting a given text into upper case.

Week12

Design a RPC application to add and subtract a given pair of integers

Reference Book:

1. Advance Unix Programming Richard Stevens, Second Edition Pearson Education

2. Advance Unix Programming, N.B. Venkateswarlu, BS Publication.

WIRELESS NETWORKS AND MOBILE COMPUTING

IV Year B.Tech. - IT II- Sem.   **L**   **T/P/D**   **C**

                                             3   **1/-/-**   **3**

Objectives:

- ➢ Introduction of an advanced element of learning in the field of wireless communication.
- ➢ Expose the students to the concepts of wireless devices and mobile computing.
- ➢ To impart fundamental concepts in the area of mobile computing, to provide a computer systems perspective on the converging areas of wireless networking, and software, and to introduce selected topics of current research interest in the field.

Outcomes:

- ➢ Students to understand the concept of mobile computing and architecture of mobile communication.
- ➢ Students to apply the concepts of mobile communications to the transactions and transaction management.
- ➢ Students to understand the working of heterogeneous networks

UNIT-I:

Introduction to Network Technologies and Cellular Communications:

HIPERLAN: HIPERLAN1, HIPERLAN2

WLAN: Infrared vs. Radio Transmission, Infrastructure and Ad Hoc Networks.

Bluetooth: User Scenarios, Physical Layer, MAC layer, Networking, Security, Link Management .GSM: Mobile Services, System Architecture, Radio Interface, Protocols, Localization and calling, Handover, Security, and New Data Services.

Mobile Computing (MC): Introduction to MC, Novel Applications, Limitations, and Architecture

UNTT-II:

(Wireless) Medium Access Control (MAC): Motivation for a Specialized MAC (Hidden and Exposed Terminals, Near and Far Terminals), SDMA, FDMA, TDMA, CDMA.

Mobile IP Network Layer: IP and Mobile IP Network Layers, Packet Delivery, Location Management, Registration, Tunnelling and Encapsulation, Route Optimization, DHCP.

UNIT-III:

Mobile Transport Layer: Conventional TCP/IP Protocols, Indirect TCP,

Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission / timeout freezing, Selective retransmission, Transaction oriented TCP

Database Issues: Database Hoarding & Caching Techniques, Client-Server Computing & Adaptation, Transactional Models, Query processing, Data Recovery Process & QOS Issues.

UNIT IV:

Data Dissemination and Synchronization: Communications Asymmetry, Classification of Data Delivery Mechanisms, Data Dissemination Broadcast Models, Selective Tuning and Indexing Methods, Digital Audio and Video Broadcasting (DAB & DVB).

UNIT V:

Mobile Ad hoc Networks (MANETs): Introduction, Applications & Challenges of a MANET, Routing, Classification of Routing Algorithms, Algorithms such as DSR, AODV, DSDV, etc. , Protocols and Platforms for Mobile Computing: WAP, XML, J2ME, Palm OS, Windows CE, Symbian OS, Linux for Mobile Devices.

TEXTBOOKS:

1. Jochen Schiller, "Mobile Communications", Addison-Wesley, Second Edition, 2004
2. Raj Kamal. "Mobile Computing", Oxford University Press, 2007, ISBN: 0195686772

REFERENCEBOOKS:

1. Stojmenovic and Cacute, "Handbook of Wireless Networks and Mobile Computing", Wiley, 2002, ISBN 0471419028.
2. Reza Behravanfar, "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", ISBN: 0521817331, Cambridge University Press, Oct 2004.

DESIGN PATTERNS
(ELECTIVE-III)
(COMMON TO CSE,IT)

IV Year B.Tech. - IT II- Sem.   L   T/P/D   C

                                                 3   1/-/-   3

Objectives:

- ➢ Understand the design patterns that are common in software applications
- ➢ Understand how these patterns related to object-oriented design
- ➢ Study the Creational Patterns
- ➢ Study the Structural Patterns
- ➢ Study the Behavioral Patterns

Outcomes:

- ➢ Will be able to apply Incremental/Iterative development in the program designs
- ➢ Understand Common Design Patterns
- ➢ Be Able To Identify Appropriate Patterns For Design Problems
- ➢ Be Able To Evaluate The Quality Software Source Code
- ➢ Be Able To Refactor Badly Designed Program Properly Using Patterns

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.

UNTT-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 Patterns: Adapter, Bridge, Composite.

UNTT-IV

Structural Patterns: Decorator, Facade, Flyweight, Proxy.

Behavioral Patterns: Chain of Responsibility, Command, Interpreter, Iterator.

UNIT-V

Behavioral Patterns: 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.

TEXTBOOK:

1. Design Patterns By Erich Gamma, Pearson Education
2. Head First Design Patterns By Eric Freeman-Oreiliy-spd

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.

INTELLECTUAL PROPERTY RIGHTS AND CYBER LAW
(ELECTIVE -III)

IV Year B.Tech. - IT II- Sem.	L	T/P/D	C
	3	1/-/-	3

Objectives:
- ➢ Discuss some key Intellectual Property Rights concepts,
- ➢ Identify the uses and benefits of Intellectual Property Rights,
- ➢ Discuss Copyright in the learning and research process,
- ➢ Know sources of information on Intellectual Property Rights
- ➢ Identify some Sources of information on Intellectual Property

Outcomes:
- ➢ Understand the various Intellectual Property Rights regimes,
- ➢ Appreciate Fair Use of Intellectual Property Rights principles; rights and duties in the learning and research process,
- ➢ Appreciate Copyright and its effect on Information Use and,

UNIT-I:

Introduction to Intellectual Property, Law of Trademarks, Trademark Selection & Searching IP La w - Types of IP - Agencies for IP Registration - International Treaties. Purpose and Function of Trademarks - Types of marks - Acquisition of Trademark Rights - Categories of marks - Trade names and Business names - protectable matter. Selection and Evaluation of a mark - Trademark search.

UNIT-II:

Trademark Registration Process, Post-registration Procedures, Trademark Maintenance, Transfer of Rights to Marks : Preparing and Filing the Application - Docketing Critical Dates - Examination Process - Post-examination Procedure -Registration. Affidavit of Continued Use - Affidavit of Incontestability - Renewal of Registrations - Docketing Requirements - Loss of Trademark Rights - Trademark Use and Compliance Policies - Trademark Policing and Maintenance - Use of Marks Owned by Third Parties - Transfer of Ownership or Rights in Trademarks.

UNIT-III:

Inter Partes Proceedings, Infringement, Dilution, New Developments in Trademark Law Inter Partes Proceedings - Infringement of Trademarks - Dilution of Trademarks - Related Trademark Claims. Protecting a Domain Name - Other Cyberspace Trademark issues.Law of Copyright, Subject Matter Of Copyright, Rights Afforded by Copyright Law Foundations of Copyright La w - Original ity of Material - Fixation of Material - Exclusions from Copyright Protection - Compilations, Collections, and Derivative Works. Rights of Reproduction - Rights to Prepare Derivative works - Rights of

Distribution - Rights to Perform the Work Publicly -Rights to Display the Work Publicly - Limitations on Exclusive Rights.

UNIT-IV:

Copyright Ownership, Transfers, Duration, Registration, and Searching Copyright Ownership Issues - Joint works - Ownership in Derivative works - Works Made for hire - Transfers of Copyright - Termination of Transfers of Copyright - Duration of Copyright. Copyright Registartion Application - Deposit Materials - Application Process and Registration of Copyright - Searching Copyright Office Records - Obtaining Copyright Office Records and Deposit Materials - Copyright Notice.

Copyright Infringement, New Developments in Copyright Law, Semiconductor Chip Protection Act: Elements of Infringement -Contributory Infringement and Vicarious Infringement— Defenses to Infringement - Infringement Actions - Remedies for Infringement. Copyright Protection for Computer Programs - Copyright Protection for Automated Databases - Copyright in the Electronic Age - The Digital Millenium Copyright Act - Recent Developments in Copyright Law - Terms of the Trade - Vessel Hull Protection - Semiconductor Chip Protection.

UNIT-V

Law of Patents, Patent Searches, Ownership, Transfer Patentability - Design Patents - Double Patenting - Patent Searching -Patent Application Process - Prosecuting the Application, Post-issuance Actions, Term and Maintenance of Patents. Ownership Rights - Sole and Joint Inventors - Disputes over Inventorship - Inventions Made by Employees and Independent Contractors - Assignment of Patent Rights -Licensing of Patent Rights - Invention Developers and Promoters.

Patent Infringement, New Developments and International Patent LawDirect Infringement - Inducement to Infringe - Contributory Infringement - First Sale Doctrine - Claims Interpretation - Defenses to Infringement -Remedies for Infringement - Resolving an Infringement Dispute - Patent Infringement Litigation. New Developments in Patent Law - Internationa] Patent Protection - Paris Convention - Patent Cooperation Treaty -Agreement on Trade Related Aspects of Intellectual Property Rights - Patent Law Treaty.

TEXTBOOK:

1. Intellectual Property Rights by Deborah E. Bouchoux, Cengage Learning.

REFERENCES:

1. Managing Intellectual Property - The Strategic Imperative, Second Edition by Vinod V. Sople, PHI Learning Private Limited.
2. Intellectual Property - Copyrights, Trademarks, and Patents by Richard Stim, Cengage Learning.

ADHOC AND SENSOR NETWORKS
(ELECTIVE-III)

IV Year B.Tech. - IT II- Sem.   **L   T/P/D   C**

                                                     3   1/-/-   3

Objectives:

- ➢ Understand need for ad hoc networks.
- ➢ Understand design issues for ad hoc networks.
- ➢ Understand security issues and QoS requirements.
- ➢ a broad overview of the state of wireless ad hoc networking

Outcomes:

- ➢ Analyze and design ad hoc networks
- ➢ Apply the knowledge gained in designing routing protocols for Ad hoc networks.
- ➢ Describe sensor networks
- ➢ Compare wireless and sensor network security

UNIT-I

Introduction to Ad Hoc Wireless Networks: Characteristics of MANETs, Applications of MANETs, Challenges.

Routing in MANETs: Topology-based versus Position-based approaches, Topology based routing protocols. Position based routing. Other Routing Protocols.

UNIT-II

Data Transmission in MANETs: The Broadcast Storm, Multicasting, Geo cast ing TCP over Ad Hoc Networks: TCP Protocol overview, TCP and MANETs, Solutions for TCP over Ad Hoc

UNIT-III

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

Data Retrieval in Sensor Networks: Classification of WSNs, MAC layer. Routing layer. High-level application layer support. Adapting to the inherent dynamic nature of WSNs.

UNIT-IV

Security : Security in Ad hoc Wireless Networks, Key Management. Secure Routing, Cooperation in MANETs, Intrusion Detection Systems.

Sensor Network Platforms and Tools: Sensor Network Hardware, Sensor Network Programming Challenges. Node-Level Software Platforms

UNIT-V

Operating System - TinyOS:

Imperative Language: nesC, Dataflow style language: TinyGALS, Node-Level Simulators, ns-2 and its sensor network extension, TOSSIM

TEXTBOOKS:

1. Ad Hoc and Sensor Networks - Theory and Applications, Carlos Corderio Dharma P. Aggarwal, World Scientific Publications / Cambridge University Press, March 2006.

2. Wireless Sensor Networks: An Information Processing Approach, Feng Zhao, Leonidas Guibas, Eisevier Science imprint, Morgan Kauffman Publishers. 2005, rp2009

REFERENCEBOOKS:

1. Adhoc Wireless Networks -Architectures and Protocols, C.Siva Ram Murthy, B.S.Murthy, Pearson Education, 2004

2. Wireless Sensor Networks - Principles and Practice. Fei Hu, Xiaojun Cao, An Auerbach book, CRC Press, Taylor & Francis Group, 2010

3. Wireless Ad hoc Mobile Wireless Networks - Principles, Protocols and Applications, Subir Kumar Sarkar, et al, Auerbach Publications, Taylor & Francis Group, 2008.

COMPUTER FORENSICS
(ELECTIVE-III)

IV Year B.Tech. - IT II- Sem.   **L   T/P/D   C**

                                                        3   1/-/-   3

Objectives:

- ➢ Understand why computer forensics is an essential part of Information Security.
- ➢ Protect the subject computer system during the forensic examination from any possible alteration, damage, data corruption, or virus introduction.
- ➢ To discover and recover all files on the subject system. This includes existing normal files, deleted yet remaining files, hidden files, password-protected files, and encrypted files.
- ➢ To analyze all possibly relevant data found in special (and typically inaccessible) areas of a disk. .

Outcomes:

- ➢ Understand computer forensics
- ➢ Prepare for computer investigations
- ➢ Understand enforcement agency investigations
- ➢ Understand corporate investigations

UNIT-I

Computer Forensics Fundamentals: What is Computer Forensics?, Use of Computer Forensics in Law Enforcement, Computer Forensics Assistance to Human Resource/Employment Proceedings, Computer Forensics Services, Benefits of Professional Forensics Methodology, Steps taken by Computer Forensics Specialists.

Types of Computer Forensics Technology: Types of Military Computer Forensic Technology, Types of Law Enforcement – Computer Forensic Technology, Types of Business Computer Forensic Technology. Computer **Forensics Evidence and Capture:** Data Recovery Defined, Data Back-up and Recovery, The Role of Back, up in Data Recovery, The Data Recovery Solution.

UNIT-II

Evidence Collection and Data Seizure: Why Collect Evidence ? Collection Options, Obstacles, Types of Evidence, The Rules of Evidence, Volatile Evidence, General Procedure, Collection and Archiving, Methods of Collection, Artifacts, Collection Steps.

Controlling Contamination : The Chain of Custody.

Duplication and Preservation of Digital Evidence: Preserving the Digital

Crime Scene, Computer Evidence Processing Steps, Legal Aspects of Collecting and Preserving Computer Forensic Evidence.

UNIT-III

Computer Image Verification and Authentication: Special Needs of Evidential Authentication, Practical Consideration, Practical Implementation. **Computer Forensics analysis and validation:** Determining what data to collect and analyze, validating forensic data, addressing data-hiding techniques, performing remote acquisitions.

Network Forensics: Network forensics overview, performing live acquisitions, developing standard procedures for network forensics, unsing network tools, examining the honeynet project.

UNIT – IV

Processing Crime and Incident Scenes: Indentifying digital evidence, collecting evidence in private – sector incident scenes, processing law enforcement crime scenes, preparing for a search, securing a computer incident or crime scene, seizing digital evidence at the scene, storing digital evidence, obtaining a digital hash, reviewing a case. **Current Computer Forensic tools:** evaluating computer forensic tool needs, computer forensics software tools, computer forensics hand ware tools, validating and testing forensics software.

UNIT-V

E-Mail Investigations: Exploring the role of e-mail in investigation, exploring the roles of the client and server in e-mail, investigating e-mail, investigating e-mail crimes and violations, understanding e-mail servers, using specialized e-mail forensic tools.

Cell phone and mobile device forensics: Understanding mobile device forensics, understanding acquisition procedures for cell phones and mobile devices. Working with Windows and DOS Systems: understanding file systems, exploring Microsoft File Structure, Examining NTFS disks, Understanding whole disk encryption, windows registry, Microsoft startup tasks,   MS-DOS startup tasks, virtual machines.

TEXT BOOK:
1. Computer Forensics, Computer Crime Investigation by John R. Vacca, Firewall Media, New Delhi.
2. Computer Forensics and Investigations by Nelson, Phillips Enfinger, Steuart, CENGAGE Learning.

REFERENCE BOOKS:
1. Real Digital Forensics by Keith J.Jones, Richard Bejtlich, Curtis W.Rose, Addison-Wesley Pearson Education.
2. Forensic Compiling, A Tractitioneris Guide by Tony Sammes and Brian Jenkinson, Springer International edition.

CLOUD COMPUTING
(ELECTIVE IV)
(COMMON TO CSE,IT)

IV Year B.Tech. - IT II- Sem.	L	T/P/D	C
	3	1/-/-	3

Objectives:

> ➤ The objective of the course is to study about Benefits of cloud model – limitations of cloud – legal issues in the cloud – key characteristics of cloud computing – Challenges for the cloud – The evolution of cloud computing.

> ➤ Study Amazon EC2 ,Google App Engine cloud systems;

Outcomes:

> ➤ Identify and describe cloud computing techniques and their roles in building intelligent cloud

> ➤ Effectively Identify the Identity and Privacy in the Cloud

> ➤ How End user access to cloud Computing

UNIT I:

Introductory concepts and overview: Distributed systems – Parallel Computing architectures: Vector processing, Symmetric multi processing and Massively parallel processing systems – High performance Cluster computing – Grid computing – Service Oriented Architecture overview – Virtualization.

Overview of Cloud Computing: Meaning of the terms cloud and cloud computing – cloud based service offerings.

UNIT II:

Grid computing Vs cloud computing: Benefits of cloud model, limitations, legal issues, key characteristics of cloud computing, Challenges for the cloud, the evolution of cloud computing.

Web services delivered from the Cloud: Infrastructure as a service – Platform – as – a – service – Software – as – a – service.

Building Cloud networks: Evolution from the MSP model to cloud computing and software – as – a service, the Cloud data centre – SOA as step toward cloud computing, Basic approach to a data centres based SOA.

UNIT III:

Federation Presence, Identity and Privacy in the Cloud: Federation in the cloud, Presence in the cloud, Privacy and its relation to cloud based information system.

Security in the Cloud: Cloud security challenges – Software-as-a-service security. **Common standards in Cloud computing:** The open cloud consortium, the distributed management task force, standards for application developers, standards for messaging, standards for security.

UNIT IV:

End user access to cloud Computing: Youtube , Zimbra, Facebook, Zoho, DimDim Collaboration.

Mobile internet devices and the cloud: Smartphone, mobile operating systems for smart phones, Mobile Platform virtualization, Collaboration applications for mobile platforms, future trends.

UNIT V:

Virtualization: Adding guest Operating system. Cloud computing case studies 1: Amazon EC2 – Amazon simple DB – Amazon S3 – Amazon Cloud Front – Amazon SQS.

Cloud computing case studies2: Google App Engine – Google web tool kit – Microsoft Azure Services platform – windows live – Exchange on line SharePoint services – Microsoft dynamic CRM – salesforce.com CRM – App Exchange.

TEXT BOOKS:

1. Cloud computing implementation, management and security by John W Rittinghouse, James F Ransome, CRC Press, Taylor & Francis group, 2010.

2. Cloud Computing a practical approach by Anthony T velte, Toby J. Velte Robert Elsenpeter, Tata McGraw Hill edition, 2010.

REFERENCE BOOKS:

1. Cloud Application Architectures by George Reese, Oreilly publishers.

2. Cloud Computing and SOA convergence in your enterprise, by David S. Linthicum, Addison – Wesely.

E – COMMERCE
(ELECTIVE – IV)
(COMMON TO CSE & IT)

IV Year B.Tech. - IT II- Sem.	L	T/P/D	C
	3	1/-/-	3

Objectives:

- ➢ Examine current and emerging issues of managing E-commerce.
- ➢ Evaluate planning and frameworks required for E-commerce.
- ➢ Distinguish the legal and ethical issues involved in E commerce.
- ➢ Explain the marketing strategies aligned to E-commerce.

Outcomes:

- ➢ Explain business technologies, standards and processes involved in implementing e-commerce
- ➢ Apply advance modes on usage of information technology in business activities, new
- ➢ Opportunities developed from the usage of Internet among its users.

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, and Value added networks.

UNIT – III

Intra Organizational Commerce : Work Flow, Automation Customization and internal Commerce, Supply chain Management.

UNIT - IV

Corporate Digital Library: Document Library, digital Document types, corporate Data Warehouses. Advertising and Marketing - Information based marketing, Advertising on Internet, on-line marketing process, market research.

UNIT – V

Consumer Search and Resource Discovery: Information search and

Retrieval, Commerce Catalogues, Information Filtering. Multimedia - key multimedia concepts, Digital Video and electronic Commerce, Desktop video processing, 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.

SERVICE ORIENTED ARCHITECTURE
(ELECTIVE -IV)

IV Year B.Tech. - IT II- Sem.   L   T/P/D   C

                                                 3   1/-/-   3

Objectives:

- ➢ To have knowledge about the web Services evolution, models and architecture.
- ➢ To have overview about SOA.
- ➢ To apply SOA to develop Web Services.

Outcomes:

- ➢ Student should know the concepts of Web Services and SOA.
- ➢ Student should be able to develop Web Services using SOA.

UNIT-I

Evolution and Emergence of Web Services : Evolution of distributed computing. Core distributed computing technologies -client/server, CORBA, JAVARMI, 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.

UNIT-IV

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

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.

TEXTBOOKS:

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 Kaufmarrn Publishers,2005.

STORAGE AREA NETWORKS
(ELECTIVE IV)
(COMMON TO CSE & IT)

IV Year B.Tech. - IT II- Sem.   **L   T/P/D   C**

                                             3   1/-/-   3

Objectives:

- ➢ Creation of huge data and their storage.
- ➢ Understand Storage Area Networks characteristics and components
- ➢ Understand the different RAID levels.
- ➢ Critical security attributes for information systems.

Outcomes:

- ➢ Understand, appreciate and effectively explain the underlying concepts of database technologies
- ➢ Design and implement a database schema for a given problem-domain

Unit I:

Introduction to Storage Technology : Review data creation and the amount of data being created and understand the value of data to a business, challenges in data storage and data management, Solutions available for data storage, Core elements of a data center infrastructure, role of each element in supporting business activities

Unit II:

Storage Systems Architecture : Hardware and software components of the host environment, Key protocols and concepts used by each component,Physical and logical components of a connectivity environment, Major physical components of a disk drive and their function, logical constructs of a physical disk, access characteristics, and performance Implications, Concept of RAID and its components , Different RAID levels and their suitability for different application environments: RAID 0, RAID 1, RAID 3, RAID 4, RAID 5, RAID 0+1, RAID 1+0, RAID 6, Compare and contrast integrated and modular storage systems ,High-level architecture and working of an intelligent storage system

Unit III:

Introduction to Networked Storage : Evolution of networked storage, Architecture, components, and topologies of FC-SAN, NAS, and IP-SAN , Benefits of the different networked storage options, Understand the need for long-term archiving solutions and describe how CAS fulfils the need , Understand the appropriateness of the different networked storage options for different application environments

Unit IV:

Information Availability & Monitoring & Managing Datacenter : List reasons for planned/unplanned outages and the impact of downtime, Impact of downtime, Differentiate between business continuity (BC) and disaster recovery (DR) ,RTO and RPO, Identify single points of failure in a storage infrastructure and list solutions to mitigate these failures , Architecture of backup/recovery and the different backup/recovery topologies , replication technologies and their role in ensuring information availability and business continuity, Remote replication technologies and their role in providing disaster recovery and business continuity capabilities

Identify key areas to monitor in a data center, Industry standards for data center monitoring and management, Key metrics to monitor for different components in a storage infrastructure, Key management tasks in a data center

Unit V:

Securing Storage and Storage Virtualization : Information security, Critical security attributes for information systems, Storage security domains, List and analyzes the common threats in each domain, Virtualization technologies,

Block-level and file-level virtualization technologies and processes

Case Studies

The technologies described in the course are reinforced with EMC examples of actual solutions. Realistic case studies enable the participant to design the most appropriate solution for given sets of criteria.

TEXT BOOKS:

1. EMC Corporation, Information Storage and Management, G.Somasundaram, A.Shrivastava, Wiley Publishing.

REFERENCE BOOKS:

1. Robert Spalding, "Storage Networks: The Complete Reference", Tata McGraw Hill , Osborne, 2003.

2. Marc Farley, "Building Storage Networks", Tata McGraw Hill, Osborne, 2001.

3. Meeta Gupta, Storage Area Network Fundamentals, Pearson Education Limited, 2002.