

**COURSE STRUCTURE  
AND  
DETAILED SYLLABUS**

**for**

**B.Tech Four Year Degree Course – I - IV year**

**in**

**COMPUTER SCIENCE AND ENGINEERING**

**(CSE)**

**(Applicable for the batches admitted from 2012-2013)**



**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY**

**(An Autonomous Institution approved by UGC and affiliated to JNTUH)**

**Yamnampet, Ghatkesar, R.R.District-501 301.**

**B.Tech CSE I YEAR I SEMESTER COURSE STRUCTURE**

Sl. No	Code	Subject	L	T	P/D	C	Max. Marks	
							Int.	Ext.
1.	121EN01	English – I	3	-	-	3	30	70
2.	121MA01	Engineering Mathematics – I	3	2	-	3	30	70
3.	121PH01	Engineering Physics – I	3	1	-	3	30	70
4.	121CH01	Engineering Chemistry - I	2	1	-	2	30	70
5.	121IT01	Computer Programming	3	1	-	3	30	70
6.	121ME01	Engineering Drawing - I	2	-	4	4	30	70
7.	121EN71	English Language Lab – I	-	-	2	1	25	50
8.	121PH71	Engineering Physics Lab-I	-	-	3/2	1	25	50
9.	121CH71	Engineering Chemistry Lab	-	-	3/2	1	25	50
10.	121IT71	Computer Programming Lab	-	-	3	2	25	50
11.	121ME71	Engineering workshop-I	-	-	3/2	1	25	50
12.	121IT72	IT Workshop - I	-	-	3/2	1	25	50
<b>Total :</b>			<b>16</b>	<b>5</b>	<b>15</b>	<b>25</b>	<b>330</b>	<b>720</b>

**I YEAR II SEMESTER COURSE STRUCTURE**

Sl. No.	Code	Subject	L	T	P/D	C	Max. Marks	
							Int.	Ext.
1.	121EN02	English-II	2	1	-	2	30	70
2.	121MA03	Engineering Mathematics – II	3	2	-	3	30	70
3.	121PH02	Engineering Physics – II	3	1	-	3	30	70
4.	121CS01	Data Structures and C++	4	1	-	4	30	70
5.	121ME02	Engineering Drawing – II	1	-	3	2	30	70
6.	121CH02	Engineering Chemistry -II	2	1	-	2	30	70
7.	121ME04	Basic Mechanical Engineering	4	-	-	4	30	70
8.	121EN72	English Language Lab – II	-	-	2	1	25	50
9.	121CS71	Data structures and C++ Lab	-	-	3	2	25	50
10	121PH72	Engineering Physics Lab – II	-	-	3/2	1	25	50
11	121IT73	IT workshop -II	-	-	3/2	1	25	50
<b>Total :</b>			<b>19</b>	<b>6</b>	<b>11</b>	<b>25</b>	<b>310</b>	<b>790</b>

## II YEAR I SEMESTER COURSE STRUCTURE

Sl. No	Code	Subject	L	T	P/D	C	Max. Marks	
							Int.	Ext.
1.	121MA05	Engineering Mathematics – III	3	2	-	3	30	70
2.	121EC06	Switching Theory and Logic Design	3	1	-	3	30	70
3.	121EC02	Basic Electronics	3	1	-	3	30	70
4.	121EE41	Basic Electrical Engineering	3	1	-	3	30	70
5.	121CS03	Object Oriented Programming through Java	4	1	-	4	30	70
6.	121IT02	Mathematical Foundations of Computer Science	3	1	-	3	30	70
7.	121EN73	Functional and Communicative Written English	-	-	3	2	25	50
8.	121EE91	Basic Electrical Engineering Lab	-	-	3/2	1	25	50
9.	121EC84	Basic Electronics Lab	-	-	3/2	1	25	50
10.	121CS74	Object Oriented Programming through Java Lab	-	-	3	2	25	50
<b>Total :</b>			<b>19</b>	<b>7</b>	<b>9</b>	<b>25</b>	<b>280</b>	<b>620</b>

## II YEAR II SEMESTER COURSE STRUCTURE

Sl. No	Code	Subject	L	T	P/D	C	Max. Marks	
							Int.	Ext.
1.	121IT04	Design and Analysis of Algorithms	3	1	-	3	30	70
2.	121MB49	Managerial Economics, Financial Analysis	3	1	-	3	30	70
3.	121IT03	Data Base Management Systems	3	1	-	3	30	70
4.	121EC32	Data Communications	3	1	-	3	30	70
5.	121EM08	Computer Organization & Microprocessor and Interfacing	3	1	-	3	30	70
6.	121MA07	Probability and Statistics	3	1	-	3	30	70
7.	121EN74	Effective English Communication and Soft Skills	-	-	3	2	25	50
8.	121CS73	Comprehensive Viva I	-	-	-	1	-	50
9.	121IT75	Data Base Management Systems Lab	-	-	3	2	25	50
10.	121EM74	Microprocessor and Interfacing Lab	-	-	3	2	25	50
<b>Total :</b>			<b>18</b>	<b>6</b>	<b>9</b>	<b>25</b>	<b>255</b>	<b>620</b>

**III YEAR I SEMESTER COURSE STRUCTURE****III YEAR II SEMESTER COURSE STRUCTURE**

Sl. No	New Code	Subject	L	T	P/D	C	Max. Marks	
							Int.	Ext.
1.		Open Elective - II	3	-	-	3	30	70
2.	3FC09	Web Technologies	3	1	-	3	30	70
3.	3EC08	Compiler Design	3	1	-	3	30	70
4.	3FC06	Computer Graphics	3	1	-	3	30	70
5.	3FC11	Information Security	3	1	-	3	30	70
6.		Professional Elective – I	3	1	-	3	30	70
7.	3HC77	Logical Reasoning	-	-	2	1	25	50
8.	3E677	Comprehensive Viva II	-	-	-	1	-	50
9.	3E678	Compiler Design Lab	-	-	4	2	25	50
10.	3FC82	Web Technologies Lab.	-	-	4	2	25	50
	3E691	Technical Paper Writing & Seminar – II	-	-	2	1	25	-
		<b>Total :</b>	<b>18</b>	<b>5</b>	<b>12</b>	<b>25</b>	<b>280</b>	<b>620</b>

OPEN ELECTIVE - I		PROFESSIONAL ELECTIVE - I	
New Code	Subject	New Code	Subject
3HC51	Basic Spanish Language	3FC18	Computer Forensics
3HC41	Basic French Language	3EC11	Artificial Intelligence
3HC46	Basic German Language	3EC12	Software Project Management
3BC16	Operations Research	3EC13	Software Architecture & Design Pattern
3ZC04	Entrepreneurship		
3DC07	VLSI Design		
3B515	Product Design & Service		

OPEN ELECTIVE II	
New	Subject
3ZC03	Banking Operations, Insurance and Risk Management
3G642	Fundamentals of Bio Informatics
3BC28	Robotics
3ZC05	General Management and Entrepreneurship
3ZC07	Fundamentals of Disaster Management
3ZC12	Project Management and Finance

### IV YEAR I SEMESTER COURSE STRUCTURE

Sl. No	New Code	Subject	L	T	P/D	C	Max. Marks	
							Int.	Ext.
1.	3FC05	Data Warehousing and Data Mining	3	1	-	3	30	70
2.		Professional Elective - II	3	1	-	3	30	70
3.	3E709	Software Testing	3	1	-	3	30	70
4.	3ZC02	Management Science	3	1	-	3	30	70
5.	3EC16	Mobile computing	4	-	-	4	30	70
6.	3GC06	Environmental Studies	3	1	-	3	30	70
7.	3GC33	Culture, Values, Professional Ethics and IPR	2	1	-	2	30	70
8.	3E780	Project Phase – I	-	-	2	1	50	-
9.	3E781	Industry Oriented Mini Project	-	-	-	2	25	50
10.	3E779	Software Testing Lab	-	-	4	2	25	50
11.	3FC77	Data Warehousing and Data Mining Lab	-	-	4	2	25	50
12.	3E792	Technical Paper Writing & Seminar – III	-	-	2	1	25	-
<b>Total :</b>			<b>21</b>	<b>6</b>	<b>12</b>	<b>29</b>	<b>360</b>	<b>640</b>

PROFESSIONAL ELECTIVE - II	
New Code	Subject
3FC19	Semantic Web & Social Networks
3E715	Cloud Computing
3E714	Information Retrieval System
3FC12	Multimedia and Image Processing

### IV YEAR II SEMESTER COURSE STRUCTURE

Sl. No	New Code	Subject	L	T	P/D	C	Max. Marks	
							Int.	Ext.
1.		Professional Elective - III	4	-	-	4	30	70
2.	3EC18	Advanced Computer Architecture	4	-	-	4	30	70
3.	3E884	Project Phase – II	-	-	15	10	50	150
4.	3E885	Comprehensive Viva III	-	-	-	2	-	50
5.	3E893	Technical Paper Writing & Seminar – IV	-	-	2	1	25	-
<b>Total :</b>			<b>8</b>	<b>-</b>	<b>17</b>	<b>21</b>	<b>135</b>	<b>340</b>

PROFESSIONAL ELECTIVE - III	
New Code	Subject
3E817	Human Computer Interaction
3DC06	Embedded and Real time systems
3EC25	Scripting Languages
3F822	Electronic- Commerce

Note: All End Examinations (Theory and Practical) are of **Three** hours duration.

**T – Tutorial                      L- Theory                      P/D – Practical/Drawing**

Note: All End Examinations (Theory and Practical) are of **Three** hours duration.

**T – Tutorial                      L- Theory                      P/D – Practical/Drawing**

## Program objective:

The B. Tech in Computer Science and Engineering program emphasizes the use of computer as a sophisticated problem solving tool.

The first two years of this program begins with a set of introductory courses, like Mathematics, physics, English, computer languages (C,C++,Java), Database Management Systems, which provide students with a firm foundation in mathematics, computer science, as well as communication skills. These courses include weekly labs in which students use state-of-the art software development techniques to create solutions to interesting problems.

The last two years of study focuses on the concepts and techniques used in the design and development of advanced software systems. In addition, students choose from a rich set of electives, which covers skills in demand. These advanced courses give broad opening for research and help them to opt specialization in their higher studies. A generous allotment of open electives allows students to learn foreign languages like French, German, Spanish; and it includes computing with a business focus.

Students in this program pursue an inter-disciplinary course of study that combines strong foundation in computer science with a focus on interdisciplinary areas. This program is designed for students who seek to blend their computer science abilities with skills in demand and skills specific to another domain to solve problems in that domain.

Having completed this course, a student is prepared to work independently within a well structured design frame work in the job and for higher studies.

### **THE PROGRAM IS DESIGNED TO ACHIEVE THE FOLLOWING OUT COMES :**

- a. Graduate of this program will demonstrate knowledge of Mathematics, basic and advanced Computer usage.
- b. Graduates will demonstrate an ability to identify, formulate and solve industry related problems.
- c. Graduates will demonstrate an ability to design analyze and interpret data.
- d. Graduates will demonstrate flair to help industry to take strategic decisions.
- e. Graduates will demonstrate an ability to visualize and work in laboratory and on multi-disciplinary tasks.
- f. Graduates will demonstrate skills to use modern software engineering approach and tools.
- g. Graduates will demonstrate knowledge of professional and ethical responsibilities.
- h. Graduates will demonstrate ability to communicate effectively in both verbal and written form.
- i. Graduates will show the understanding of impact of computer application on the society and also will be aware of contemporary issues.
- j. Graduates will develop confidence for self education and ability for life-long learning.
- k. Graduate s can participate and succeed in competitive examinations like NET, TOFEL.

**Syllabus for B. Tech. I Year I semester**  
**Computer Science and Engineering**  
**ENGLISH – I**  
**(English Language Teaching Through Literature)**  
**(Common to all branches)**

Code: 121EN01

L	T	P/D	C
3	-	-	3

**UNIT I: NOBLE THOUGHT**

1. **Reading** : The Last Leaf – O. Henry
2. **Writing** : Paragraph writing
3. **Listening** : Listening for sounds
4. **Speaking** : Greeting, taking leave and introducing
5. **Grammar** : Naming words
6. **Vocabulary** : Homonyms, homophones, homographs, synonyms and Antonyms

**UNIT II: BIOGRAPHY**

1. **Reading** : Sri C.V. Raman- Shubashree Desikan
2. **Listening** : Listening for words
3. **Speaking** : Making requests
4. **Grammar** : Naming words specific (Part I)
5. **Vocabulary** : Word Formation

**UNIT III: HUMAN INTEREST**

1. **Reading** : The Connoisseur- Nergis Dalal
2. **Writing** : Summarizing
3. **Listening** : Listening for word stress
4. **Speaking** : Apologizing and inviting
5. **Grammar** : Making naming words specific (part 2)
6. **Vocabulary** : Collocations

**UNIT IV: DISASTER MANAGEMENT**

1. **Reading** : The Cuddalore Experience-Anu George
2. **Writing** : Basics of Essay Writing
3. **Listening** : Listening for theme
4. **Speaking** : Congratulating, offering sympathy, condolences and making complaints
5. **Grammar** : Tenses

**UNIT V: HUMOUR**

1. **Reading** : The Luncheon – Somerset Maugham
2. **Writing** : Note making
3. **Listening** : Listening for details and taking notes
4. **Speaking** : Interview skills
5. **Grammar** : Adverbials and modal verbs

**UNIT VI: Outlook**

1. **Reading** : Indian Crowds – Nirad C. Choudhary
2. **Writing** : Information transfer
3. **Listening** : Listening to announcements and directions
4. **Speaking** : Making presentations
5. **Grammar** : Conjunctions and prepositions
6. **Vocabulary** : Business vocabulary

**Text Books:**

1. **Enjoying Everyday English: A Rama Krishna Rao, Sangam Books, HYD.**

**Reference Books:**

1. **Business Vocabulary In Use -Bill Mascull, Cambridge University Press.**
2. **How to build a better vocabulary –Nurnberg Maxwell & Morris Rosenblum: Grand Central Publishers**
3. **How to read better and faster: Norman Lewis, W.R.Goyal Publishers, New Delhi**



**Syllabus for B. Tech. I Year I semester  
Computer Science and Engineering  
Code: 121MA01      **ENGINEERING MATHEMATICS – I**  
(Common to all branches except Bio-Technology)**

L	T	P/D	C
3	2	-	3

**UNIT-I**

**Sequences and series:** Sequences and series- Convergence and divergence – Comparison test – integral test – Cauchy root test – Ratio test– Raabe’s test – Log test. Mean value theorems – Taylor’s and Maclaurin’s theorems without remainders and Taylor’s series expansions.

**UNIT-II****Functions of several variables**

Functions of several variables, total differentiation, Jacobians and its properties, Maxima and Minima of functions of several variables (two and three variables), Lagrange’s method of multipliers.

**UNIT-III****Matrix Theory-I**

Elementary Transformations, rank of a matrix –Echelon form, normal form, Inverse of a matrix using elementary operations, Consistency and solutions of systems of linear equations using Gauss elimination. Linear dependence and independence of vectors.

**UNIT-IV****Matrix Theory-II**

Characteristic roots and vectors of a matrix, properties of Eigen values and Eigen Vectors, Caley-Hamilton theorem and its applications, Diagonalization of a matrix.

**UNIT-V****Multiple integrals**

Double and triple integrals, change of order of integration and change of variables. Length of curves. Area of regions and Volume of solid of revolution

**UNIT-VI****Vector Calculus:**

Scalar and vector fields , vector differentiation, level surfaces, directional derivative, gradient of a scalar field, divergence and curl of a vector field, Laplacian operator and related properties.

Line and surface integrals, verification of problems on Green’s theorem in plane, Gauss-Divergence theorem, Stoke’s theorem.

**TEXT BOOKS:**

1. Advanced Engineering Mathematics, S. R. K. Iyengar and R.K. Jain, Narosa Publishing House, London, 2002.
2. Higher Engineering Mathematics, B.S. Grewal, Khanna Publications, New Delhi.
3. Engineering Mathematics, B. V. Ramana, Tata McGraw Hill Publishing Company Ltd.

**REFERENCE BOOKS:**

1. A text Book of KREYSZIG’s Engineering Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications.
2. A text book of Engineering Mathematics, Dr.M. Venkata Krishna, G.Shankar Rao,Galgotia Publications,New Delhi

**Syllabus for B. Tech. I Year I semester**  
**Computer Science and Engineering**  
**Engineering Physics – I**  
 (Common to all branches)

Code: 121PH01

L	T	P/D	C
3	1	-	3

**UNIT - I**

**Crystallography and Crystal Structures:** Space Lattice, Unit Cell, Lattice Parameters, Crystal Systems, Bravais Lattices, 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, and hcp Structures.

**UNIT-II**

**X-ray Diffraction:** Basic Principles, Bragg's Law, Powder Method, Applications of X-ray Diffraction.

**Defects in Crystals:** Point Defects: Vacancies, Substitutional, Interstitial, Frenkel and Schottky Defects-Calculation of concentration, Qualitative treatment of line (Edge and Screw Dislocations) Defects, Burger's Vector.

**UNIT- III**

**Elements of Statistical Mechanics:** Phase space, Ensemble, Difference between micro, canonical & grand canonical ensemble, Qualitative explanation of Maxwell - Boltzman Statistics, Bose – Einstein Statistics, and Fermi – Dirac Statistics, Density of states quantitative treatment.

**UNIT-IV**

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

**UNIT-V**

**Free electron theory of Metals:** Classical free electron theory (Drunde and Lorentz), Electrical conductivity of a metals, Relaxation time, Collision time and mean free path, Success of classical free electron theory, Breakdown of free electron theory, Fermi – Dirac distribution function- variation with temperature, The quantum free electron theory.

**UNIT-VI**

**Band Theory of Solids:** Bloch Theorem, Kronig-Penny Model (Qualitative Treatment), E-K curve  $\bar{e}$ , velocity of, point of inflection, effective mass of an electron and its significance, Origin of Energy Band Formation in Solids, Classification of Materials into Conductors, Semi Conductors & Insulators.

**Text Books:**

1. Engineering Physics, P K Palanisamy, Sitech Publications

**Reference Books:**

1. Introduction to Solid State Physics, Charles Kittel, John Wiley Publisher
2. Solid State Physics, Neil W. Ashcroft, N. David Mermin,, Thomson Publisher,
3. Statistical Mechanics, Donald Allan McQuarrie, University Science Books Publisher, California
4. Statistical Mechanics, Sathya Prakash, Pragathi Prakashan Publisher
5. Quantum Mechanics by G. Aruldas
6. Applied Physics, M Chandrashekar and P Appala Naidu, VGS Book Links

**Syllabus for B. Tech. I Year I semester  
Computer Science and Engineering  
ENGINEERING CHEMISTRY-I  
(Common to all Branches except Bio-Technology)**

Code: 121CH01

L	T	P/D	C
2	1	-	2

**UNIT-I: WATER TECHNOLOGY-I**

Introduction ,Effect of water on Rocks and Minerals, Types of impurities in Water, Hardness of Water- Temporary and permanent hardness. Units and Inter conversion of Units. Estimation of Hardness by EDTA Method. Problems on Temporary and permanent Hardness.Disadvantages of Hard Water. Portable water, Methods of Treatment of Water for Domestic purpose-Sedimentation, Coagulation, Filtration, Diinfection-Chlorination, Ozonization. Reverse osmosis

**UNIT-II: WATER TECHNOLOGY-II**

Water for Industrial purpose –water for steam making-Boiler Troubles-Carry over-Priming and foaming, Boiler Corrosion, Scales and Sludges, Caustic Embrittlement. Water Treatment:-Internal Treatment – colloidal, phosphate Calgon, Carbonate, Sodium aluminate conditioning of Water.External Treatment-Lime soda Process,Zeolite Process,Ion –Exchange Process,-Numerical Problems.

**UNIT III: ELECTROCHEMISTRY**

Conductance-types, Electrolytic conductance-specific, equivalent and molar conductance, ionic conductance, ionic mobilities, Kohlrausch's law and its applications. EMF: Galvanic Cells, types of Electrodes, Reference Electrode (SCE), Redox electrode (Quinhydrone electrode), Ion Selective Electrodes (Glass Electrode) Nernst equation and its applications, Potentiometric titrations, Numerical problems.

**UNIT IV: BATTERIES**

Cell and Battery, Primary and secondary cells, (Ni-Cd cell, Lithium ion cells, lead-Acid cell,). Applications of batteries, Fuel cells – Hydrogen – Oxygen fuel cell, Advantages of fuel cells.

**UNIT V: SCIENCE OF CORROSION**

Definition, Examples – Types of Corrosion: Theories of Corrosion and Mechanism – Dry Corrosion, (Direct Chemical attack), Wet Corrosion, (Electro Chemical Theory) Principles of Corrosion, Galvanic Series, Galvanic Corrosion, Concentration Cell Corrosion. Factors influencing Corrosion Control of Corrosion – Proper Design. Use of pure metal and metal alloys, Passivity, Cathodic Protection – Sacrificial anode and Impressed Current Modifying the Environment, use of Inhibitors.

**UNIT VI: PROTECTIVE COATING AND METHODS THEIR APPLICATIONS ON METALS**

Surface Preparation: (1) Solvent Cleaning (2) Alkali Cleaning (3) Pickling and Etching (4) Sand Blasting (5) Mechanical Cleaning. Types of protective Coating: Metallic Coatings – Anodic Coatings, Galvanization, Cathodic Coatings – Tinning, Metal Cladding, Electroplating Ex: Chromium Plating, Metal Spraying, Cementation Sharadizing, Colourizing, Chromizing, Chemical Conversion Coating: (1) Phosphate (2) Chromate (3) Anodized Coatings.

Organic Coatings: Paints – Constituents and their functions

**Text Books:**

1. Engineering Chemistry: Dr.M.Tirumala Chary and Dr.E.Laxminarayana, Scitech publications.
2. Engineering Chemistry: P.K. Jain and M.K. Jain, Dhanpathrai Publications – 14<sup>th</sup> Edition

**Reference Books:**

1. Essentials of Physical chemistry; Baul & Tuli; S. Chand Publications.
2. Text of Engineering Chemistry by S.S. Dara & Mukkati S. Chand & Co, New Delhi(2006)
3. Chemistry of Engineering Materials by CV Agarwal, C.P Murthy, A.Naidu, BS Publications.
4. Engineering Chemistry by R. P. Mani, K. N. Krishna B. Rama Devi Cengage Learning New Delhi (2010).
5. Engineering Chemistry by Shiva Shnakar Tata McGraw Hill (2010).

**Syllabus for B. Tech. I Year I semester**  
**Computer Science and Engineering**  
**COMPUTER PROGRAMMING**  
 (Common to all Branches)

Code: 121IT01

L	T	P/D	C
3	1	-	3

**UNIT – I**

**Computer fundamentals** – Computer Systems, Computer Hardware, Computer Software, Computer Environments – Personal Computing Environment, Time-sharing Environment, Client/Server Environment, Distributed Computing, Computer Languages – Machine Languages, Symbolic Languages, High-Level Languages, Creating and running programs – Writing and Editing, compiling, linking, and executing programs, System Development – SDLC (Pages 1 – 28 of Text Book 1).

**Problem solving Techniques** – Algorithms, pseudo code, flowcharts – Simple illustrations and domain problems like: Sum of digits of a number, Nature of quadratic equations, Income Tax Problem, Standard Deviation (Pages 1019 – 1032 of Text Book 1).

**UNIT – II**

**Introduction to the C language** – Background, C Programs, Structure of a C Program, Comments, the greeting program, identifiers, constants, variables and keywords.

**Types** – void, integral, and floating-point types. Variables – declarations and initialization. Input / Output – Streams, Formatting input and output (Pages 29 – 76 of Text Book 1).

**Expressions** – Primary expressions, post-fix expressions, pre-fix expressions, unary expressions, binary expressions, Precedence and associativity, evaluating expressions, type conversions – implicit type conversion, explicit type conversion, statements – statement type, role of semicolon, statements and defined constants (Pages 94 – 134 of Text Book 1).

**Decision control structures** – Logical data and operators, Two-way selection – if..else, nested if, dangling else, conditional expressions, Multi-way selection – switch statement, else-if (231 – 263 of Text Book 1).

**UNIT – III**

**Repetitive control structures** – Pre-test and post-test loops – initialization and updation, event and counter controlled loops, while, do..while, for, break and continue statements, comma expression (Pages 303 – 348 of Text Book 1).

**Functions** – User-defined functions - Function definition, arguments, return value, prototype, arguments and parameters, inner-function communication. Standard functions – Math functions, Random numbers. Scope – local global (Pages 149 – 199 of Text Book 1).

**Parameter passing** – Call by value and call by reference.

**Recursive functions** – Definition, examples, advantages and disadvantages (Pages 349 – 359 of Text Book 1).

**Macros** – Definition, examples, comparison with functions.

**UNIT – IV**

**Arrays** – Definition and declaration, initialization, accessing elements of in arrays, storing values in arrays, inter-function communication – passing individual elements, passing the whole array, array applications, bubble sort, sequential search. Two dimensional and multidimensional arrays (Pages 459 – 487 and 493, 501 of Text Book 1).

**UNIT – V**

**Pointers** – Introduction, pointer constants, pointer values, pointer variables, accessing variables through pointers, pointer declaration and definition, declaration versus redirection, initialization of pointer variables, pointer for inter function communication, pointer to pointers (Pages 557 – 577 of Text Book 1).

**Arrays and pointers** – Pointer arithmetic and arrays, Memory allocation functions – static and dynamic memory allocation, array of pointers (Pages 612 – 633 of Text Book 1).

**Strings** – Input output functions, string handling functions.

**UNIT – VI**

**Enumerated, Structure, and Union types** – The type definition (typedef), enumerated types, Structure, Unions (Pages 745 – 786 of Text Book 1).

**Files** – File name, file information table, streams, text and binary streams, stream file processing, system created streams, Standard library I/O functions, file open and close, formatting I/O functions, character I/O functions, Binary I/O, Standard library functions (Pages 393 – 441, 821 – 840 of Text Book 1).

**Text Books:**

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

**References:**

1. The C Programming Language, B.W. Kernighan, Dennis M.Ritchie, PHI/Pearson Education.
2. Let us C by Yashwanth P. Kanetkar 8<sup>th</sup> edition BPB publications.
3. Computer programming for teens by Mary Farrell.

**Syllabus for B. Tech. I Year I semester  
Computer Science and Engineering  
ENGINEERING DRAWING-I  
(Common to all Branches)**

**Code: 121ME01**

L	T	P/D	C
2	-	4	4

**UNIT – I**

**Introduction to Engineering Drawing:** Drawing Instruments and their uses, types of lines, use of pencils, Lettering, Rules of dimensioning.

**Construction of polygons:** Inscription and superscription of polygons given the diameter of circle.

**Introduction To Scales (Theory Only):** Scales Used In Engineering Practice and Concept Of Representative Fraction

**Curves used in Engineering Practice and their Constructions:**

Conic Sections including Rectangular Hyperbola - General method only.

**UNIT – II**

**Drawing of Projections or Views (Orthographic Projection in First Angle Projection Only):** Principles of Orthographic Projections – Conventions – First and Third Angle Projections, Projection of Points, Projection of Lines - inclined to both planes, True lengths, traces.

**UNIT – III**

**Projections of Planes:** Projections of regular Planes, traces, Oblique planes, Introduction to Auxiliary planes

**UNIT –IV**

**Projections of Solids:** Projections of Regular Solids – Regular Polyhedra, solids of revolution, Axis inclined to both planes.

**UNIT –V**

**Sections of Solids:** Sections and Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views

**UNIT –VI**

**Intersection of Similar and Dis-similar Solids:** Line method, Cutting plane method, Intersection of Prism Vs Prism, Cylinders Vs Cylinder (Under Similar category) and Cylinder Vs Prism (Under Dis-similar category)

**TEXT BOOKS:**

1. Engineering Drawing, N.D. Bhatt / Charotar publishers
2. Engineering Drawing, K.L.Narayana and Kannaiah / Scietech publishers.

**REFERENCES:**

1. Engineering Drawing, K.Venugopal/G.Sreekanjana, New Age International Publishers.
2. Engineering Drawing, B.V.R.Gupta, M.Raja Roy/I.K.International Publishing House,

**Syllabus for B. Tech. I Year I semester  
Computer Science and Engineering  
ENGLISH LANGUAGE LAB-I  
(Common to all Branches)**

Code: 121EN71

L	T	P/D	C
-	-	2	1

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

**Objectives:**

1. To expose the students to a variety of self-instructional, learner-friendly modes of language learning.
2. To help the students cultivate the habit of listening and learning the sounds of English language i.e. phonetics from the computer monitor, thus preparing them for the correct pronunciation and language fluency.
3. To train them to converse effectively in different situations of life.
4. To help the students in producing effective oral presentations, and to enable them for extempore.

**Syllabus:**

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

1. Introduction to the Sounds of English – Vowels, Diphthongs & Consonants.
2. Situational Dialogues/Role Play
3. Oral Presentations-Prepared and Extempore
4. 'Just A Minute' Sessions (JAM)
5. Describing Objects/Situations/People
6. Information Transfer

**Minimum Lab Requirements**

The English Language Lab shall have two parts.

- i) The Computer aided Language Lab for 60 students with 60 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-vusyak aids with a P.A. System, a T.V., a digital stereo-audio & video system and camcorder etc.

**System Requirement (Hardware component)**

Computer network with LAN with minimum 60 multimedia systems with the following specifications:

- 1) P-IV Processor
  - a) Speed – 2.8 GHZ
  - b) RAM -512 MB Minimum
  - c) Hard Disk – 80 GB
- 2) Headphones of High quality

**Suggested Software:**

- \* Pro Power Pronunciation Software
- \* Hi Class system Monitoring Software.
- \* A.P.State Council of Higher Education Software (Foundation Course in communication skills)
- \* Face to Face elementary and Pre –intermediate CDs.
- \* Cambridge Advanced Learners' English Dictionary with CD
- \* Learn to speak English book + CD set. (Set of 4 CDs)
- \* Mastering English (CD).
- \* DOKI English CD

**REFERENCES**

1. English Conversation Practice by Grant Taylor, Tata Mc.Graw Hill
2. Speaking Effectively, Cambridge University Press
3. A text book of English Phonetics for Indian Students by T. Balasubramanian Mac Millan

**Syllabus for B. Tech. I Year I semester**  
**Computer Science and Engineering**  
**Engineering Physics Lab-I**  
 (Common to all Branches)

**Code: 121PH71**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	3/2	1

1. Calculation of error – Error estimation
2. Determination of wavelength of a given laser Source of light by using diffraction grating
3. To find frequency of tuning fork – Melde’s experiment
4. To find the frequency of ac signal generator – A c Sonometer
5. R C Network
6. L C R series and parallel resonance
7. Determination of rigidity modulus of a given wire – Torsional pendulum
8. Plank’s constant
9. Determination of the acceleration due to gravity by compound pendulum.

Note: Any six of the above nine Experiments are to be conducted.



**Syllabus for B. Tech. I Year I semester**  
**Computer Science and Engineering**  
**Engineering Chemistry Lab**  
(Common to all Branches)

**Code:121CH71**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	3/2	1

**Minimum any Six of the following Experiments**

1. Estimation of  $\text{MnO}_2$  in Pyrolusite.
2. Estimation of Hardness of water.
3. Estimation of  $\text{Mn}^{+2}$  /  $\text{Cu}^{+2}$  ions by colorimetry.
4. Estimation of acid by conductometric titrations.
5. Estimation of acid by potentiometric titrations.
6. Determination of viscosity.
7. a) Preparation of Aspirin  
b) Preparation of Polymer (Thiokol rubber).
8. Determination of Flash and Fire point of a fuel using Abel's / Pensky – Martin's Apparatus.
9. Determination of Calorific value of a solid fuel by Bomb Colorimeter.
10. Grease n penetration Test.

**Syllabus for B. Tech. I Year I semester****Computer Science and Engineering****Code: 121IT71****COMPUTER PROGRAMMING LAB**

L	T	P/D	C
-	-	3	2

**Unit I (Cycle 1)**

1. Write an algorithm for converting a given Celsius temperature to its equivalent Fahrenheit temperature and draw a flowchart.
2. Write an algorithm to find the largest of three given numbers and draw a flowchart.
3. Write an algorithm and draw a flowchart for finding the roots and nature of roots of a quadratic equation, given its coefficients.
4. Write an algorithm and flowchart for finding the first n Fibonacci numbers, give n.

**Unit II (Cycle 2)**

1. Write an algorithm, flowchart, and C program for:
2. Finding the area and circumference of a circle of given radius.
3. Finding the volume of a sphere of given radius.
4. Finding the lateral surface area of a right circular cone of given base radius and height.
5. Finding selling price of an item, given its cost price and profit percent.
6. Finding the interest on a given principal for a given period of time at a given rate of per year.
7. Write a C program to display all the sizes of data types in C.
8. Write a C program to display a given decimal integer into an equivalent octal number and hexadecimal number using %o and %x in printf function.

**Unit II (Cycle 3)**

1. Write a C program to find the roots and nature of the roots of a quadratic equation, given its coefficients.
2. Write a C program for finding the largest of three given numbers.
3. A salesman gets a commission of 5% on the sales he makes if his sales is below Rs.5000/- and a commission of 8% on the sales that exceeds Rs.5000/- together with Rs.250/-. Write an algorithm or a flowchart and develop C program for computing the commission of the salesman, given his sales.

**Unit III (Cycle 4)**

1. Write three C programs to print a multiplication table for a given number using while, do-while, and for loops.
2. Write a C program to compute the sum of:
  - a)  $1+x+x^2+x^3+\dots+x^n$ , given x and n.
  - b)  $1! + 2! + 3! + \dots + n!$ , given n.
  - c)  $1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10! + \dots$  to n terms where the  $n^{\text{th}}$  term becomes less than 0.0001.

**Unit III (Cycle 5)**

1. Write a C program in the menu driven style to perform the operations +, -, \*, /, % between two given integers.
2. Write a C program to find the largest and the least of some numbers given by the user.
3. Write a C program to find the sum of the digits of a positive integer.

**Unit III (Cycle 6)**

1. Write C functions for the following:
  9. A function that takes an integer n as argument and returns 1 if it is a prime number and 0 otherwise.
  10. A function that takes a real number x and a positive integer n as arguments and returns  $x^n$ .
  11. A function that takes a positive integer n as an argument and returns the  $n^{\text{th}}$  Fibonacci number.
  12. Using recursion write C functions for the following:
    13. Factorial of a non-negative integer n.
    14. Number of combinations of n things taken r at a time.
    15. Greatest Common Divisor of two integers.
    16. Least Common Multiple of two integers.

**Unit III (Cycle 7)**

1. Write a menu driven style program to compute the above functions (cycle 6) on the choice of the function given by the user.
2. Define macros for the following and use them to find sum of the squares of the minimum and maximum of two given numbers.
  - Larger of two numbers.
  - Smaller of two numbers.
  - Sum of the squares of two numbers.
3. Write a program to generate Pascal's triangle.
4. Write a program to count the number of letters, words, and lines in a given text.

**Unit IV (Cycle 8)**

1. Write a program to store the numbers given by the user in an array, and then to find the mean, deviations of the given values from the mean, and variance.
17. Write a C program to initially store user given numbers in an array, display them and then to insert a given number at a given location and to delete a number at a given location.
18. Write a program to store user given numbers in an array and find the locations of minimum and maximum values in the array and swap them and display the resulting array.

**Unit IV (Cycle 9)**

1. Write a C program to implement the operations of matrices – addition, subtraction, multiplication.
2. Write a program to find whether a given matrix is symmetric, lower triangular, upper triangular, diagonal, scalar, or unit matrix.

**Unit V (Cycle 10)**

1. Write a function to swap two numbers.
2. Write a function to compute area and circumference of a circle, having area and circumference as pointer arguments and radius as an ordinary argument.

**Unit VI (Cycle 11)**

1. Define a structure for complex number. Write functions on complex numbers (addition, subtraction, absolute value, multiplication, division, complex conjugate) and implement them in a menu driven style.
2. Define a structure point. Write a program to find the distance between two points.
3. Define a structure student having members roll no., name, class, section, marks. Create an array of 10 students give the data and find the average marks, section-wise.

**Unit VI (Cycle 12)**

Write a program to:

1. Create a file by the name given by the user or by command line argument and add the text given by the user to that file.
19. Open the file created above and display the contents of the file.
20. Copy a file into some other file, file names given by the user or by command line arguments.
21. Append a user mentioned file to another file.
22. Reverse the first n characters of a file.

Code:121ME71

**Syllabus for B. Tech. I Year I semester**  
**Computer Science and Engineering**  
**ENGINEERING WORKSHOP-I**  
(Common to all Branches)

L	T	P/D	C
-	-	3/2	1

**1. House Wiring**

To connect the Tube Light as per circuit diagram

To connect the Calling Bell as per circuit diagram

**2. Home Appliances**

Practice of disassembly and assembly of various home appliances (such as Fans, Mixers, Washing machines etc.,

**3. Welding**

Preparation and welding of Lap Joint

Preparation and welding of Butt Joint

**Syllabus for B. Tech. I Year I semester**  
**Computer Science and Engineering**  
**IT WORKSHOP - I**  
**(Common to all Branches)**  
 (Alternative weeks)

**Code:121IT72**

L	T	P/D	C
-	-	3/2	1

**Week1:**

**Introduction to Computer:** Identify the peripherals of a computer, components/peripherals in a CPU & its functions. Introduction to the types of Operating System, Install computer with dual boot operating system (windows, Linux with PowerPoint presentation). Comparison of types of OS in different platform.

**Week 2:** Assembling and Deassembling Praticals

**Week 3:**

**Introduction to Microsoft Windows XP:** Software and data, Components of Desktop, Working with windows

**Week 4:**

**Getting Started with Microsoft Windows XP:** Using the Start Menu, Obainting Help on Windows  
 Changing Setting, Using Applications in Windows, Shutting Down Windows

**Week 5:**

Introduction to Linux Operating system, Linux Commands, DOS commands

**Week 6:**

Install computer applications in Linux and windows.

Software and hardware trouble shoot, personal computer security settings and application software of the system.

**Cyber Ethics:** Access websites and email, effectively and securely browse (banksites, https webpages) and share the data, categories of websites (.com, .in, .edu, .org).

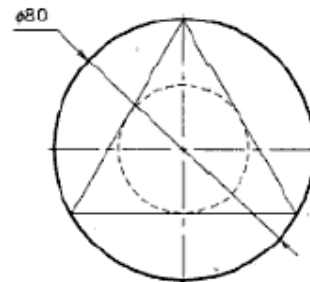
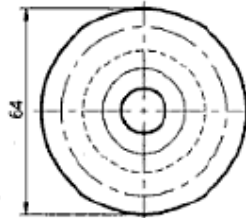
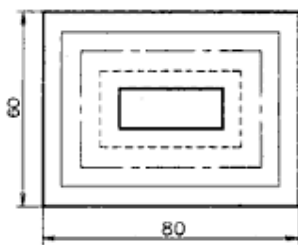
**Week 7: Drafting of 2D Figures:**

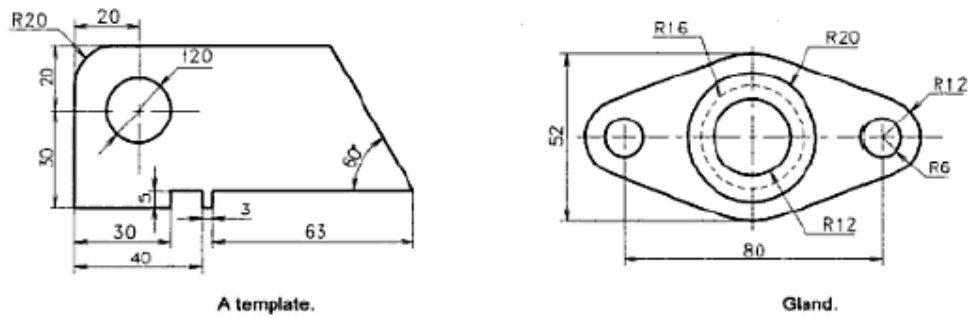
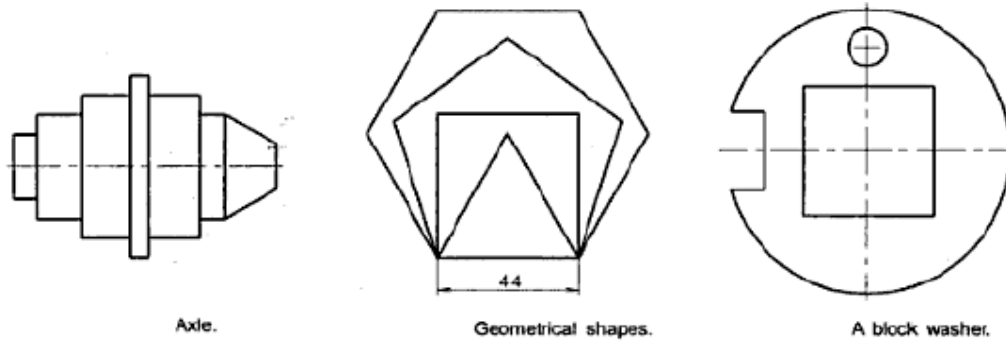
Draw commands – Line, Rectangle, Circle, Arc, Polygon, Ellipse, Hatch, text – Various methods of using these commands.

Modify commands – Erase, Move, Rotate, Copy object, Offset, Array, Mirror, Break, Trim, Extend, Stretch, Chamfer, Fllet, Scale etc.,

Dimensioning commands –Dimensioning of lines, arcs

**Simple Exercises on drawing using AUTOCAD:**



**TEXT BOOK:**

1. "Comdex Information Technology Course Kit" by Vikas Gupta, Dreamtech Press
2. Engineering Drawing with AutoCAD by R.B.Choudary/ Anuradha Publishers.

**Syllabus for B. Tech. I Year II semester**  
**Computer Science and Engineering**  
**English – II**  
**(English Language Teaching Through Literature)**  
 (Common to all Branches)

	L	T	P/D	C
	2	1	-	2

**UNIT – I**

1. Speech : Swami Vivekananda
2. Grammar : Phrasal Verbs

**UNIT – II**

1. Short Story : Ha' Penny – Alan Paton
2. Grammar : Concord-Subject-Verb Agreement

**UNIT – III**

1. Letter : Abraham Lincoln's Letter to His Son's Teacher
2. Grammar : Sentence Construction-I  
(Kinds of Sentences-Assertive, Imperative, Interrogative, Exclamatory)

**UNIT – IV**

1. Short Story : The Only American From Our Village by Arun Joshi
2. Grammar : Sentence Construction-II  
(Simple, Compound, Complex sentences)

**UNIT – V**

1. Essay : 'Of Studies' -Francis Bacon
2. Grammar : Idioms

**UNIT –VI**

1. Speech : Polonius Speech –An extract from Shakespeare's *Hamlet*
2. Short Story : Luck – Mark Twain

**Text Books:**

1. **Inspiring Speeches and Lives**; B. Yadava Raju, Maruthi Publications, Guntur.
2. **Vignettes of Life (A collection of short stories by T. Padma)**, McMillan India Ltd.

**Reference Books:**

1. **Barron's TOEFL**; Barron, Galgotias Publication Pvt. Ltd.
2. **A Modern Approach to Verbal And Non Verbal Reasoning** – R S Aggarwal, S.Chand Publications.

**Syllabus for B. Tech. I Year II semester**  
**Computer Science and Engineering**  
**Code:121MA03 ENGINEERING MATHEMATICS – II**  
**(Common to all Branches except Bio-Technology)**

L	T	P/D	C
3	2	-	3

**UNIT-I**

**Ordinary Differential Equations Of First Order:** Differential equations of first order and first degree – Exact, linear and Bernoulli equations. Applications- law of natural growth and decay and Newton's law of cooling, Orthogonal Trajectories.

**UNIT-II**

**Ordinary Linear Differential Equations Of Higher Order:** Linear differential equations of second and higher orders with constants coefficients – Method of variation of parameters – Systems of linear differential equations with constant coefficients.

**UNIT-III****Partial Differential Equations:**

Partial differential equations : Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions – Solutions of first order linear equation – Non-linear (Standard type) equations , Method of separation of variables.

**UNIT-IV****Laplace Transformations:**

Laplace Transformations – Laplace transform, Shifting theorems, Multiplication by powers of t, Division by t, Laplace transform of Unit Step function, Impulse function, and periodic functions.

**Inverse Laplace transforms:**

Inverse Laplace transform, Shifting theorems, Partial fraction method, convolution theorem (without proof), solutions of ordinary differential equations with constant coefficients

**UNIT-V****Z- transforms:**

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

**UNIT-IV**

**Fourier series:** Fourier series – Even and Odd functions – Fourier series in an arbitrary interval – Half-range Fourier sine and cosine series.

**Fourier Transforms:**

Fourier transformation, sine and cosine transformations, Finite Fourier transforms, Parseval's identities.

**TEXT BOOKS:**

1. Advanced Engineering Mathematics, S. R. K. Iyengar and R.K. Jain, Narosa Publishing House, London, 2002.
2. Higher Engineering Mathematics, B.S. Grewal, Khanna Publications, New Delhi.
3. Engineering Mathematics, B. V. Ramana, Tata McGraw Hill Publishing Company Ltd.

**REFERENCE BOOKS:**

1. A text Book of KREYSZIG's Engineering Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications.
2. A text book of Engineering Mathematics, Dr.M. Venkata Krishna, G.Shankar Rao,Galgotia Publications,New Delhi



**Syllabus for B. Tech. I Year II semester**  
**Computer Science and Engineering**  
**ENGINEERING PHYSICS– II**  
 (Common for EEE, ECE, ECM, CSE, IT)

Code: 121PH02

L	T	P/D	C
3	1	-	3

**UNIT-I**

**Semiconductor Physics:** Fermi Level in Intrinsic and Extrinsic Semiconductors, Intrinsic Semiconductors and Carrier Concentration, Extrinsic Semiconductors and Carrier Concentration-drift & diffusion, Direct & Indirect Band Gap Semiconductors, Hall Effect in semiconductors.

**UNIT-II**

**Physics of Semiconductor Devices:** Formation of PN Junction and working of PN junction. Energy Diagram of PN Diode, I-V Characteristics of PN Junction, LED.

**UNIT-III**

**Dielectric Properties:** Electric Dipole, Dipole Moment, Dielectric Constant, Electric Susceptibility, Polarizability, Electronic, Ionic and Orientation Polarizations and Calculation of Polarizabilities, Piezo-electricity, Pyro-electricity and Ferro- electricity.

**UNIT - IV**

**Magnetic Properties:** Electron spin, Relation between electron spin and magnetic moment, Origin of Magnetic Moment, Bohr Magneton, Classification of Dia, Para and Ferro Magnetic Materials on the basis of Magnetic Moment, Domain Theory of Ferro Magnetism on the basis of Hysteresis Curve, Soft and Hard Magnetic Materials, Properties of Anti-Ferro and Ferri Magnetic Materials, super conductivity – Meisner's effect.

**UNIT - V**

**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.

**Basics of Fiber Optics:** Introduction, Principle of Optical Fiber, Acceptance Angle and Acceptance Cone, Numerical Aperture, Types of Optical fibres. Attenuation in Optical Fibers, Application of Optical Fiber in communication system.

**UNIT - VI**

**Nanotechnology:** Origin of Nanotechnology, Nano Scale, Surface to Volume Ratio, Quantum Confinement, Bottom-up Fabrication: Sol-gel, Precipitation, Combustion Methods; Top-down Fabrication: Chemical Vapour Deposition, Thermal evaporation, (XRD&TEM), carbon nanotubes.

**Text Books:**

1. Engineering Physics, P K Palanisamy, Sitech Publications

**Reference Books: -**

1. Introduction to Solid State Physics, by Charles Kittel
2. Solid State Physics Neil by W. Ashcroft, N. David Mermin
3. Solid State Physics by S L Singal
4. Physics for semiconductor devices by Michael Shur
5. Nanotechnology: A Gentle Introduction To The Next Big Idea by M Ratner, D Ratner
6. Nano Materials by A K Bandyopadhyay

a	b	c	d	e	f	g	h	i	j	k
√	√							√		

**Syllabus for B. Tech. I Year II semester**  
**Computer Science and Engineering**  
**DATA STRUCTURES AND C++**  
**(Common to all Branches)**

**Code: 121CS01**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>-</b>	<b>4</b>

**UNIT – I**

Introduction to data structures: Abstract data type(ADT), Stacks and Queues circular queues and their implementation with arrays.Stack applications: infix to post fix conversion, postfix expression evaluation. Applications of queues.

**Objective:**

On completion of the unit/chapter, a student should be able to: (i)define what is an abstract data type (ii)differentiate linear and non-linear data structures(iii)Representation and implementation of stack and queue using arrays(iv)convert the given infix expression to post fix notation and evaluate the postfix expression using stack(v)understand the applications of stack and queue.

**UNIT – II**

Singly linked lists, doubly linked lists, circular list and their operations, representing stacks and queues with linked lists.

**Objective:**

On completion of the unit/chapter a student should be able to:(i)Understand what is a linked list (ii)know how structurally the distinct categories of lists differ from each other(iii)implement various categories of lists such as singly linked lists, doubly linked lists and circular lists (iv)understand how to represent and implement stack and queue using linked list

**UNIT – III**

Trees- Binary trees, terminology, representation, traversals  
 Graphs- terminology, representation, graph traversals (dfs & bfs).

**Objective:**

On completion of the unit/chapter a student should be able to:(i)understand the terminology and uses of trees and graphs(ii)explain distinct representations of trees as well the graphs(iii)analyze binary search tree(iv)construct binary search tree, given the elements and traverse the tree in pre-order, in-order and post-order(v)differentiate Depth First Search(DFS) and Breadth First Search (BFS) techniques and could traverse through the graph using DFS and/or BFS

**UNIT - IV**

Searching - Linear and binary search methods.  
 Sorting - Bubble sort, selection sort, Insertion sort, Quick sort, merge sort.

**Objective:**

On completion of the unit/chapter a student should be able to:(i)understand what is meant by searching and could differentiate linear search operation performed on an ordered set of elements and an unordered set of elements(ii)differentiate the linear search and binary search techniques (iii)explain the procedure involved in binary search method(iv)understand the necessity of sorting techniques(v)list and implement different types of sorting techniques(vi)know and compare the time complexity of each sorting technique

**UNIT – V**

Introduction to C++ programming-object oriented programming concepts, Structured Vs OOP.  
 Classes and objects-class definition, Objects, class scope and accessing members, Constructors-default constructor, parameterized constructor, constructor initialization list, copy constructor. Destructors.

Objective:

On completion of the unit/chapter a student should be able to:(i)differentiate structured programming approach and the object oriented programming approach(ii)understand the terms class, object and could write simple programs in C++ (iii)understand how to use access specifiers (iv)explain the differences between constructor and normal function

#### **UNIT – VI**

Static class members, this pointer, friend functions, Dynamic memory management with operators new and delete.Overloading-function overloading, Operator overloading, restrictions on operator overloading, overloading unary and binary operators,templates, inheritance.

Objective:

On completion of the unit/chapter a student should be able to:(i)describe static class members(ii)make use of this pointer, friend function(iii)demonstrate the dynamic memory allocation and deallocation(iv)understand what is overloading and write programs on function overloading, operator overloading(v)understand and differentiate types of templates (vi)learn inheritance and its usage.

#### **TEXT BOOKS**

- 1.**Data Structure Through C** by Yashavant Kanetkar.
- 2.The complete reference C++ By Herb Schildt.
3. Data Structures, A pseudocode Approach with C by Richard F. Gilberg & Behrouz A. Forouzan.

#### **REFERENCES**

1. Alfred V. Aho, Jeffrey D. Ullman, John E. Hopcroft. *Data Structures and Algorithms*. Addison Wesley, 1983.
2. Data Structures using c Aaron M.Tenenbaum , Yedidyah Langsam,Moshe J Augenstein.
3. Introduction To Data Structures In C By Kamtane

**Syllabus for B. Tech. I Year II semester**  
**Computer Science and Engineering**  
**ENGINEERING DRAWING – II**  
 (Common to all Branches)

**Code: 121ME02**

L	T	P/D	C
1	-	3	2

**UNIT – I**

**Scales:** Construction of Plain, Diagonal, Comparative, Vernier Scales and Scale of chords.

**UNIT – II**

**Development of Surfaces:** Development of Surfaces of Right Regular Solids – Prisms, Cylinders, Pyramids, Cones and their parts.

**UNIT – III**

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

Conversion of Orthographic Views to Isometric Views of simple objects.

**UNIT –IV**

**Transformation of Projections:** Conversion of isometric views to orthographic views of simple objects.

**UNIT –V**

**Perspective Projections:** Principle, Perspective elements, Perspective View of Points, Lines, Plane Figures and Simple Solids - Vanishing Point Method, Visual ray method.

**UNIT –VI**

**Introduction to Computer Aided Drafting:** Generation of points, lines, curves, polygons, simple solids, dimensioning.

**TEXT BOOKS:**

1. Engineering Drawing, N.D. Bhatt / Charotar publishers
2. Engineering Drawing, K.L.Narayana and Kannaiah / Sciotech publishers.

**REFERENCES:**

1. Engineering graphics with Auto CAD- R.B Choudary / Anuradha Publishes
2. Engineering Drawing, K.Venugopal/G.Sreekanjana, New Age International Publishers.
3. Engineering Drawing, B.V.R.Gupta, M.Raja Roy/I.K.International Publishing House.

**Syllabus for B. Tech. I Year II semester**  
**Computer Science and Engineering**  
**ENGINEERING CHEMISTRY – II**  
 (Common to EEE, ME, ECE, CSE, IT and ECM)

Code:121CH02

L	T	P/D	C
2	1	-	2

**UNIT I: PHASE RULE**

Definitions – phase, component, degree of freedom, phase rule equation. Phase diagrams – one component system: Water system. Two component system lead – silver system, heat treatment based on iron carbon phase diagram, hardening, annealing.

**UNIT II: POLYMER TECHNOLOGY**

Polymers, terminology, Polymerization- Types of Polymerization – Addition and Condensation and Co-Polymerization. Plastics – Thermosetting and Thermoplastics – Preparation, Properties and applications of the following:

PVC, Teflon, Bakelite, Nylon 6:6 and Dacron.

Rubber-natural and artificial rubber, Vulcanization of natural rubber, Buna S, Buna N, Thiokol.

Conducting Polymers: Classification, Poly acetylene, polyaniline and their applications.

**UNIT III: SURFACE CHEMISTRY**

Solid surfaces, types of adsorption, Langmuir adsorption isotherm, BET adsorption isotherm. Calculation of surface area of solid & application of adsorption, classification of colloids, Electrical & optical properties of colloids and applications of colloids in industry.

**UNIT IV: CHEMICAL FUELS**

Fuels, classification –Solid fuels – coal – analysis – proximate and ultimate analysis and their significance  
 Liquid fuels – primary – petroleum – refining of petroleum –synthetic petrol – Bergius and Fischer Tropsch's process; Gaseous fuels – natural gas, analysis of flue gas by Orsat's method  
 Combustion – problems, Calorific value of fuel – HCV, LCV, determination of calorific value by Junker's gas calorimeter. Combustion cracking knocking

**UNIT V: LUBRICANTS**

Definition and function of lubricants – Types of Lubrication and Mechanism – Thick Film or Hydrodynamic Lubrication, Thin Film or Boundary film Lubrication, Extreme Pressure Lubrication. Classification and properties of lubricants – Viscosity, flash and fire points, cloud and pour points, aniline point, Neutralization Number and Mechanical Strength.

**UNIT-VI: REFRACTORIES AND INSULATORS**

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

**Text Books:**

1. Engineering Chemistry: Dr.M.Tirumala Chary and Dr.E.Laxminarayana, Scitech publications.
2. Engineering Chemistry: P.K. Jain and M.K. Jain, Dhanpathrai Publications – 14<sup>th</sup> Edition

**Reference Books:**

1. Essentials of Physical chemistry; Baul & Tuli; S. Chand Publications.
2. Text of Engineering Chemistry by S.S. Dara & Mukkati S. Chand & Co, New Delhi(2006)
3. Chemistry of Engineering Materials by CV Agarwal, C.P Murthy, A.Naidu, BS Publications.
4. Engineering Chemistry by R. P. Mani, K. N. Krishna B. Rama Devi Cengage Learning New Delhi (2010).
5. Engineering Chemistry by Shiva Shnakar Tata McGraw Hill (2010).

**Syllabus for B. Tech. I Year II semester**  
**Computer Science and Engineering**  
**Code:121ME04 BASIC MECHANICAL ENGINEERING**  
**(Common to all Branches except Bio-Technology)**

L	T	P/D	C
4	-	-	4

**UNIT – I**

**Thermodynamics:** Basic concepts of Thermodynamics, Property of gases, Zeroth Law, First Law of Thermodynamics and its applications, Second Law of Thermodynamics, Carnot cycle, Air standard cycles - Otto, Diesel, Cycles and simple problems.

**Internal combustion engines and gas turbines:** Internal combustion engines, definitions, classification, components, working of two- stroke, four stroke cycle engines, SI and CI Engines, performance parameters, simple problems, Need for cooling, and lubrication of IC engines.

**UNIT – II**

**Steam generators:** Classification of boilers, differences between fire tube and water tube boilers, Cochran and Lancashire boilers, Locomotive boiler, Babcock – Wilcox boiler and High pressure boilers - Benson and La-Mount boilers only.

**Steam and Gas Turbines:** Layout of steam power plant, types of steam turbines, differences between impulse and reaction turbines, description of impulse and reaction turbines, methods of reducing turbine speed (compounding), Schematic of gas turbine power plants - closed and open cycle types, methods to improve performance of open cycle plant.

**UNIT – III**

**Refrigeration and Air Conditioning:** Definition, Refrigeration and Air conditioning, Schematic and description of vapour compression refrigeration and vapour absorption systems, Domestic Refrigerator, summer and winter air conditioning systems.

**UNIT – IV**

**Hydraulic pumps and Turbines:** Reciprocating and centrifugal pumps and their applications.

Layout of Hydro-electric power plant, Classification of hydraulic turbines, Description and principle of operation of Pelton wheel and Francis turbine (without velocity triangles), Axial flow reaction turbine.

**UNIT- V**

**Metal casting:** Casting methods-Sand casting, shell mold casting, Investment casting, Diecasting, - characteristics, advantages, limitations and applications.

**Welding:** Types of welding - arc welding, gas welding & gas cutting, resistance welding-spot welding, soldering and brazing

**UNIT - VI**

**Mechanical working of metals:**

Rolling, Extrusion, Forging, Press working operations, principle, characteristics, advantages, limitations and applications.

**Machine Tools:**

Principles of working of different types of machine tools - lathe, shaper, drilling, milling, grinding, and NC Machines - Operations performed and Applications.

**TEXT BOOKS :**

1. Mathur, M.L., Mehta, F.S. and Tiwari, R.P., Elements of Mechanical Engineering, Jain Brothers, New Delhi, 2005.
2. R.K. Rajput, "Elements of Mechanical Engineering", Laxmi Publications, 1994.

**REFERENCES :**

1. P.N.Gupta, M.P. Poonia, "Elements of Mechanical Engineering", Standard Publishers Distributors Nai Sarak, Delhi.
2. R.C.Gupta, "Mechanical Engineering", Khanna Publishers, Delhi.

**Syllabus for B. Tech. I Year II semester**  
**Computer Science and Engineering**

**Code:121EN72****ENGLISH LANGUAGE LAB-II****(Common to all Branches)**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	2	1

**Introduction**

The introduction of the English Language lab is considered essential at third year level. At this stage the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalize context.

The proposed course should be an integrated theory and lab course to enable students to use good English and perform the following:

- Gather ideas and information, to organize ideas relevantly and coherently
- Engage in debates
- Participate in group discussions
- Face interviews
- Write project/research reports/technical reports
- Make oral presentations
- Write formal letters
- Transfer information from non-verbal to verbal texts and vice versa
- To communicate effectively in informal and formal situations

**Objectives**

The lab focuses on using computer-aided multimedia instruction for language development to meet the following targets:

1. To enable them to learn better pronunciation through stress on word accent, intonation, and rhythm.
2. To improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English and respond appropriately in different professional contexts.
3. To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required facility to face computer-based competitive exams such as GRE, TOEFL, GMAT etc.
4. To enable the students in equipping themselves in being assertive and convincing, while debating.

**Syllabus**

1. Introduction to Stress and Intonation.
2. Functional English –Starting a conversation-responding appropriately and relevantly-using the right body language-role plays based on different situations
3. Vocabulary building – Synonyms and antonyms, word roots, one-word substitutes, prefixes and suffixes, etymology, analogy, idioms and phrases
4. Reading Comprehension – Reading for facts, guessing meanings from the context, scanning, skimming, inferring meaning and critical reading
5. Debate

**Minimum Lab Requirement:**

The English language lab shall have two parts:

- a. The Computer Aided Language Lab for 60 students with 60 systems, one master console, LAN facility and English Language software for self-study by learners.
  
- b. The Communication Skills lab with movable chairs and audio visual aids with a PA system. A T V, Digital stereo-audio and video system and camcorder etc.

**Suggested Software:**

- ❖ Hi Class system Monitoring Software
- ❖ Globerena English Lab Plus software
- ❖ GRE Computer based test ( booklet + CD)
- ❖ GMAT Computer based test ( booklet + CD)
- ❖ GRE computer based test ( booklet + CD)
- ❖ IELTS preparatory guide CD

**REFERENCES:**

1. Communicate or Collapse: A Handbook of Effective Public Speaking
2. Group Discussions and Interviews by Pushpa Lata & Kumar, Prentice Hall of India
3. Academic Writing – A practical Guide for students by Stephen Bailey, Rontledge Falmer, London and New York, 2004



a	b	c	d	e	f	g	h	i	j	k
√	√							√		

**Syllabus for B. Tech. I Year II semester**  
**Computer Science and Engineering**  
**DATASTRUCTURES AND C++ LAB**  
**(Common to all Branches)**

**Code: 121CS71**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	3	2

**Lab Objective:**

On completion of all the exercises, a student should be able to:

- Represent and Implement the operations on basic linear and non-linear data structures
- Implement basic C++ programs using object oriented programming concepts

1. Write a C program that implement stack and its operations using arrays
2. Write a C program that implement Queue and its operations using arrays.
3. Write a C program that uses Stack operations to perform the following
  - i) Converting infix expression into postfix expression
  - ii) Evaluating the postfix expression
4. Write a C program that uses functions to perform the following operations on singly linked list.:
  - i) Creation ii) Insertion iii) Deletion iv) Traversal
5. 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
6. 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, inorder and postorder.
7. 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
8. Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
  - i) Bubble sort ii) Quick sort
9. Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
  - i) Insertion sort ii) Merge sort iii) Selection Sort
10. Write a C++ 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.
11. 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.
12. Write a C++ program that checks whether a given string is palindrome or not.

**TEXT BOOKS:**

1. Data Structure through C by Yashavant Kanetkar.
2. The complete reference C++ by Herb Schildt.
3. Data Structures, A pseudocode Approach with C by Richard F. Gilberg & Behrouz A. Forouzan.

Code:121PH72

**Syllabus for B. Tech. I Year II semester  
Computer Science and Engineering  
ENGINEERING PHYSICS LAB-II  
(Common to all Branches except Bio-Technology)**

L	T	P/D	C
-	-	3/2	1

1. Energy gap of a semiconductor
2. To study the characteristics of a thermistor
3. Characteristics of laser Diode
4. Numerical aperture of optical fiber
5. Bending loss of optical fiber
6. Stewart & Gee's Experiment (Determination of magnetic induction flux density along the axis of a circular coil).
7. Newton's Rings
8. Hall effect
9. Dielectric constant of a given material

Note: Any six of the above nine Experiments are to be conducted

**Syllabus for B. Tech. I Year II semester  
Computer Science and Engineering**

**Code:121IT73**

**IT WORKSHOP-II  
(Common to all CSE, IT, Bio-Tech)**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	3/2	1

**Week 1:**

Introduction to S/W's difference b/w hardware and software. Introduction to MS-Office and its importance. Using word – Accessing, overview of toolbars saving files, rulers, format painter.

**Features:** Formatting fonts, Drop cap, Applying text effects, character spacing, Borders, colors, insert Header & Footer, Date & Time options.

**Week 2:**

Creating Project

Formatting styles, Inserting Table, Bullets & Numbering, Changing Text Direction, Cell Alignment, Footnote, Hyperlink, Symbols, Spell check, Track changes.

**Week 3:**

Creating News letters

Table of content, Newspaper columns, Images from files & Clip Art, Drawing toolbar & Word Art, Formatting Images, Textboxes, Paragraphs & Mail merge.

**Week 4:**

Basics of Power Point Presentation

**Features :** PPT Orientation, Slide layouts, Inserting Text, Word Art, Formatting Text, Bullets & Numbering, Auto shapes, Lines & Arrows, Hyperlinks, Inserting Images, ClipArt, Audio, Video, Objects, Tables & Charts, Master layouts (Slide template & Notes), types of views (basic, Presentation, slide slotter, notes), Inserting – Background, text , Design Templates, Hidden slides.

**Week5:**

Introduction to Excel

**Features:** Accessing, Overview at toolbars, Saving excel files, Gridlines, Format cells, Summation, Auto fill, formatting text.

**Week 6:**

Formula in excel – Average, Standard Deviation, Charts, Roaming & Inserting worksheets, Hyper linking, count function, lookup / Vlookup, sorting, Conditional formatting.

**Week 7:**

Introduction to HTML,

Features: Formatting Tags, Linking of pages using Anchor Tags, Table tags

**Websites and Textbooks:**

23. Complete Reference Microsoft Office 2003
24. <https://office.microsoft.com/en-us/support/> (office help and how-to)
25. W3schools.com

**Syllabus for B. Tech. II Year I semester**  
**Computer Science and Engineering**  
**ENGINEERING MATHEMATICS – III**  
 (Common to CSE & IT)

Code: 121MA05

L	T	P/D	C
3	2	-	3

**UNIT I****Special Functions:**

Beta, Gamma Functions – properties, Bessel's Functions and Legendre's Polynomials - recurrence relations (without proofs), generating function and properties.

**UNIT II****Analytic functions and Complex integration:**

Analytic functions, Cauchy-Riemann equations, Complex integration, Cauchy's integral theorem, Cauchy's integral formula,

**UNIT III****Complex power series and residues:**

Taylor's and Laurent's series, Cauchy's residue theorem.

**UNIT IV****Solution of algebraic and transcendental equations and Numerical integration:**

Introduction – The Bisection Method – The Method of False Position – The Iteration Method – Newton-Raphson Method, Trapezoidal rule – Simpson's 1/3 rule – Simpson's 3/8 rule, Gaussian quadrature rule.

**UNIT V****Interpolation:**

Introduction— Finite differences- Forward Differences, Backward differences, Central differences. Newton's formulae for interpolation – Gauss Central Difference Formulae (without proofs), Lagrange's Interpolation formula for unevenly spaced points.

**UNIT VI****Numerical solution of Ordinary Differential equations:**

Solution by Taylor's series – Picard's Method of successive Approximations – Euler's Method – Runge-Kutta Methods, Predictor-Corrector Method

**Text Books:**

1. Advanced Engineering Mathematics, S. R. K. Iyengar and R.K. Jain, Narosa Publishing House, London, 2002.
2. Higher Engineering Mathematics, B.S. Grewal, Khanna Publications, New Delhi.
3. Engineering Mathematics, B. V. Ramana, Tata McGraw Hill Publishing Company Ltd.

**REFERENCE BOOKS:**

1. A text Book of KREYSZIG's Engineering Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications.
2. A text book of Engineering Mathematics, Dr.M. Venkata Krishna, G.Shankar Rao, Galgotia Publications, New Delhi

**Syllabus for B. Tech. II Year I semester**  
**Computer Science and Engineering**  
**Code: 121EC06 SWITCHING THEORY AND LOGIC DESIGN**  
**(Common to all except Bio-Tech, Mech)**

L	T	P/D	C
3	1	-	3

**UNIT - I**

**Boolean Algebra:** Axiomatic definition of Boolean algebra, Binary operators, postulates of and theorems. Switching functions, Canonical forms and Standard forms, Simplification of switching functions using theorems.

**UNIT - II**

**Minimization of Switching Functions:** Karnaugh map method, Prime implicants, don't care combinations, Minimal SOP and POS forms, Quine-McCluskey Tabular Method, Prime Implicant chart, simplification rules.

**UNIT - III**

**Combinational Logic Design:** Single output and multiple output combinational logic circuit design, AND-OR, OR-AND, and NAND/NOR realizations, Exclusive-OR and Equivalence functions, Binary adders/subtractors, Encoder, Decoder, Multiplexer, Demultiplexer, MUX realization of switching functions, Parity bit generator, Code-converters, Contact Networks, Hazards and hazard free realizations.

**UNIT - IV**

**Programmable Logic Devices, Threshold Logic:** Basic PLD's-ROM, PROM, PLA, and PLD Realization of Switching functions using PLDs.

Threshold Logic: Capabilities and limitations of Threshold gate. Synthesis of threshold functions. Multigate Synthesis.

**UNIT - V**

**Sequential Circuits:** Classification of sequential circuits (Synchronous, Asynchronous Pulse mode, and Level mode with examples). Basic flip-flops-Trigging and excitation tables. The sequential circuit model. Design of simple synchronous sequential circuits such as counters. Design of modulo-N Ring & Shift counters, Serial binary adder, and sequence detector.

Introduction to Asynchronous Machines.

**UNIT - VI**

**Algorithmic State Machines:** Salient features of the ASM ,ASM chart-simple examples-System design using data path and control subsystems- control implementations- Examples of weighing machine and Binary multiplier.

**Text Books:**

1. Digital design – Morris Mano, PHI, 2nd Edition.
2. Switching & Finite Automata theory – Zvi Kohavi, TMH, 2nd Edition.

**References:**

1. An Engineering Approach to Digital Design – Fletcher, PHI.
2. Fundamentals of Logic Design – Charles H. Roth, Thomson Publications, 5th Edition, 2004.
3. Switching Theory and Logic Design-R.P.Jain, TMH Edition, 2003.
4. Digital Logic Applications and Design – John M. Yarbrough, Thomson Publications, 2006
5. Switching Theory and Logic Design – CVS Rao, Pearson Education, 2005

**Syllabus for B. Tech. II Year I semester**  
**Computer Science and Engineering**  
**BASIC ELECTRONICS**  
 (Common to CSE, IT)

Code:121EC02

L	T	P/D	C
3	1	-	3

**UNIT-I**

SEMICONDUCTOR DIODES AND APPLICATIONS: Review of p-n junction diode, Characteristics, Parameters and AC equivalent circuit.. Half-wave diode rectifier, Ripple factor, Full-wave diode rectifier, Other full-wave circuits, Break diodes and their applications in power supply circuits.

**UNIT-II**

TRANSISTORS: Bipolar Junction transistor, Transistor Voltages and currents, amplification, Common Base, Common Emitter and Common Collector Characteristics, DC Load line and Bias Point.  
 BIASING METHODS: Base Bias, Collector to Base Bias, Voltage divider Bias, Comparison of basic bias circuits, 08 periods

**UNIT-III**

OTHER SEMI CONDUCTOR DEVICES: Silicon Controlled Rectifier (S.C.R), and its applications Unijunction transistor, and its applications, Junction Field effect Transistors JFET Characteristics, JFET Amplification. (Common source)

**UNIT-IV**

AMPLIFIERS & OSCILLATORS: Concepts of Decibel and Half power points, Single Stage CE Amplifier and Capacitor coupled two stage CE amplifier (Qualitative discussions only), Negative feedback and its effects. The Barkhausen Criterion for Oscillations, RC phase shift, Hartley, Colpitts and crystal oscillator (Qualitative discussions only). -08 periods

**UNIT-V**

VOLTAGE REGULATORS: IC 723 voltage regulators and three terminal IC regulators, Introduction to voltage multipliers, uninterrupted power supplies and switching regulators.

**UNIT-VI**

NUMBER SYSTEMS: Introduction, decimal system, Binary, Octal and Hexadecimal number systems, addition and subtraction, fractional number, Binary Coded Decimal numbers. -06periods

**TEXTBOOKS:**

1. Electronic Devices and Circuits: David. A. Bell; PHI, New Delhi, 2004
2. Electrical and Electronics & Computer Engineering for Scientists and Engineers Second Edition -K.A. Krishnamurthy & M.R.

**REFERENCEBOOKS:**

1. Electronics Devices and Circuits by Sanjeev Gupta, Dhanpat Rai Publications
2. Electronics Devices and Circuits Theory by Baystad and Nashelsky, PHI



**Syllabus for B. Tech. II Year I semester**  
**Computer Science and Engineering**  
**Code:121EE41 BASIC ELECTRICAL ENGINEERING**  
**(Common to CSE, IT, Bio-Tech, Mech)**

L	T	P/D	C
3	1	-	3

**Unit – I: Introduction to Electrical Engineering:**

Review of Ohm's Law, Basic circuit components, Kirchhoff's Laws. Types of sources, Source transformation, V- I relationship for passive elements. Series parallel circuits, Star - delta and delta - star transformation. Simple problems.

**Unit – II: Fundamentals of Single phase and three phase AC circuits:**

Sinusoidal representation of voltage & current, basic definitions, R.M.S. and Average values of Sinusoidal 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: D.C Machines:**

Principle of operation of D.C generators, Types of D.C generators, E.M.F equation, Principle of operation of D.C motors, Types of D.C motors, Torque equation, Losses and efficiency calculation in D.C Generators and D.C motors.

**Unit – IV: Transformers:**

Principle of operation, Constructional Details, Ideal Transformer and Practical Transformer, equivalent circuit, Losses, OC and SC Test, Efficiency and Regulation Calculations, Elementary treatment & Simple problems. Three phase transformers, star – delta, delta – star connections.

**Unit – V: Three phase Circuits and three phase induction motors:**

Three phase circuits – phase sequence, Star and delta connection, Relation between line and phase voltages and currents in a balanced system.

Three phase induction motor: Principle of operation, Construction, Types, Problems on slip, rotor frequency, rotor emf and torque.

**Unit – VI: Basic Instruments:**

Introduction, classification of instruments, Operating principles, Essential features of measuring instruments, Permanent Magnet Moving coil (PMMC) instruments, Moving Iron (MI) instruments, Extension of Ammeter and voltmeter ranges.

**Text Books:**

1. Basic electrical Engineering – M.S.Naidu and S.Kamakshiah – TataMcGraw-Hill,2005 edition
2. Basic Electrical Engineering –T.K.Nagesarkar and M.S.Sukhja Oxford University Press.2<sup>nd</sup> edition

**References:**

1. Theory and problems of Basic electrical Engineering- D.P.Kotahari & L.J.Nagrath PHI.
2. Principles of Electrical Engineering - V.K.Mehta, S.Chand Publications.2<sup>nd</sup> edition



**Syllabus for B. Tech. II Year I semester  
Computer Science and Engineering  
OBJECT ORIENTED PROGRAMMING THROUGH JAVA  
(COMMON TO ECM, CSE, IT)**

**Code: 121CS03**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>-</b>	<b>4</b>

**UNIT-I**

History of Java, Java buzzwords, datatypes, variables, simple java program, scope and life time of variables, operators, expressions, control statements, type conversion and casting, arrays, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, recursion, string handling, StringTokenizer.

Objective: On the completion of the unit, a student should be able to: i) Write, compile and execute simple java programs ii) Understand the syntax of classes and objects creation in java iii) Explain the differences between classes and objects iv) differentiate methods and constructors v) Understand constructor and method overloading vi) Understand how to handle strings in java

**UNIT-II**

Inheritance – Definition, single inheritance, benefits of inheritance, Member access rules, super class, polymorphism- method overriding, Dynamic method dispatch, using final with inheritance, abstract classes, Base class object.

Objective:

On the completion of the unit, a student should be able to: i) Explain the benefits of inheritance ii) Understand how to access members of super class from subclass iii) Differentiate static and dynamic polymorphism iv) Understand the usage of final keyword in inheritance v) Understand the use of abstract class

**UNIT-III**

Interfaces :definition, variables and methods in interfaces, differences between classes and interfaces, usage of implements and extends keyword, an application using interfaces, uses of interfaces.

Packages: Definition, types of packages, Creating and importing a user defined package.

Introduction to i/o programming: DataInputStream, DataOutputStream, FileInputStream, FileOutputStream, BufferedReader.

Objective:

On the completion of the unit, a student should be able to: i) Understand uses of interfaces and packages ii) Understand how to implement multiple inheritance in java iii) Explain the difference between classes and interfaces iv) Create and import packages v) Understand different streams

**UNIT-IV**

Exception handling -exception definition, benefits of exception handling, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes.

Multi-Threading:-Thread definition, types of multitasking, uses of multitasking, thread life cycle, creating threads using Thread class and Runnable interface, synchronizing threads, daemon thread.

Objective:

On the completion of the unit, a student should be able to: i) Understand benefits of exception handling ii) Handle built-in and user defined exceptions iii) Understand the uses of multi-threading iv) Create multi-threaded programs using either Thread class or Runnable interface v) Know how to synchronize threads

**UNIT-V**

Advantages of GUI over CUI, The AWT class hierarchy, Component, Frame,

user interface components- labels, button, scrollbars, text components, check box, check box groups, choices, lists panels – scrollpane, menubar, graphics, layout, managers –border, grid, flow, card and grid bag.

Event handling: Delegation event model, closing a Frame, mouse and keyboard events, Adapter classes.

Objective:

On the completion of the unit, a student should be able to: i) Understand the advantages of GUI over CUI ii) Write GUI programs iii) Able to handle events using delegation event model

#### **UNIT-VI**

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

Networking – Basics of network programming, addresses, ports, sockets, simple client server program, multiple clients, sending file from server to client.

Objective:

On the completion of the unit, a student should be able to: i) Write applet programs ii) Understand the concepts of networking iii) Understand socket programming iv) Write client-server applications

#### **TEXT BOOKS**

1. Java; the complete reference, 6th edition, Herbert Schildt, TMH.
2. Introduction to Java programming 6th edition, Y. Daniel Liang, Pearson Education.

#### **REFERENCES**

1. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell, seventh Edition, Pearson Education.
2. Core Java 2, Vol 2, Advanced Features, Cay.S.Horstmann and Gary Cornell, Seventh Edition, Pearson Education

**Syllabus for B. Tech. II Year I semester**  
**Computer Science and Engineering**  
**MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE**  
**(COMMON TO CSE, IT)**

**Code: 121IT02**

L	T	P/D	C
3	1	-	3

**UNIT – I:****Statements and Notations.**

**Connectives** – Negation, Conjunction, Disjunction – Statement Formulas and Truth Tables – Well-formed Formulas – Tautologies – Equivalence of Formulas – Duality – Tautological Implications.

**Normal Forms** – Disjunctive Normal Forms, Conjunctive Normal Forms, Principal Disjunctive Normal Forms, Principal Conjunctive Normal Forms.

**Theory of Inference** – Validity using truth tables, Rules of inference, Consistency of premises and indirect method of proof, Automatic theorem proving.

(Pages 1 – 33, 50 – 60, 65 – 78 of Textbook 1)

**Objectives:**

At the end of this unit the student will learn the logic, inference, and theorem proving techniques.

**UNIT –II:**

**Predicate Calculus** – Predicates, Statement function, Variables, Quantifiers, Predicate formulas, Free and Bound Variables, Universe of Discourse.

**Inference theory of predicate calculus** – Valid formulas and equivalences, Valid formulas over Finite Universes, Special valid formulas involving quantifiers, Theory of involving predicate calculus, Formulas involving more than one quantifier.

**Recurrence relations** – Definition, Homogeneous solution, Particular solution, Total solution.

(Pages 79 – 101 of Textbook 1 and pages of Textbook 2)

**Objectives:**

At the end of this unit the student will analyze the statements and also be able to solve recurrence relations.

**UNIT – III:**

**Relations and Ordering** – Relations, Properties of binary relations in a set, Relation matrix, Graph of a relation, Partition, Covering, Equivalence relations, Compatibility relations, Composition of binary relations, Partial Ordering, POsets.

**Lattices** – Properties of lattices, Lattices as algebraic systems, Sublattices, Direct product, homomorphism.

**Boolean algebra** – Definition and examples, Subalgebra, Direct product, Homomorphism, Boolean functions, Free Boolean algebras, Boolean expressions and functions.

(Pages 148 – 190, 378 – 416 of Textbook 1)

**Objectives:**

At the end of this unit the student will understand various algebraic structures useful to Computer science and their applications.

**UNIT – IV:**

**Algebraic Systems** – Definition and examples.

**Semigroups and Monoids** – Definition and examples, homomorphism of semigroups and monoids, subsemigroups and submonoids.

**Groups** – Definition and examples, Subgroups and homomorphisms, Cosets and Lagrange's theorem, Normal subgroups.

(Pages 270 – 273, 282 – 294, 319 – 340 of Textbook 1)

**Objectives:**

At the end of this unit the student will learn the more algebraic systems like groups, semigroups and monoids and their importance in computer science and their applications.

**UNIT – V:**

**Graphs** – Basic concepts, Isomorphisms and subgraphs, Trees and their properties, Spanning trees, Directed trees, Binary trees.

(Pages 437 – 522 of Textbook 2)

**Objectives:**

At the end of this unit the student will understand and be in a position to apply the graphs and trees.

**UNIT – VI:**

Planar graphs, Euler's Formula, Multigraphs and Euler's Circuits, Hamiltonian graphs, Chromatic Numbers (Pages 523 – 570 of Textbook 2)

**Combinatorics** – Permutations, Combinations, Principle of inclusion and exclusion.

**Objectives:**

At the end of this unit the student will learn more applications of graphs and also master Combinatorics.

**Text Books:**

1. Joe L. Mott, Abraham Kandel, Theodore P. Baker, *Discrete Mathematics for Computer Scientists & Mathematicians*, Second Edition, PHI, 2005.
2. Bernard Kolman, Robert C. Busby, Sharon Cutler Ross, *Discrete Mathematical Structures*, Fourth Edition, PHI, 2002.

**References:**

- Tremblay J. P. & Manohar R., *Discrete Mathematical Structures with applications to Computer Science*, TMH, 2006.
- Dr. D. S. Chandrasekharaiah, *Mathematical Foundations of Computer Science (Discrete Structures)*, Prism, 2006.
- Ralph P. Grimaldi and B. V. Ramana, *Discrete and Combinatorial Mathematics – An Applied Introduction*, Fifth Edition, Pearson, 2006.

**Syllabus for B. Tech. II Year I semester**  
**Computer Science and Engineering**  
**FUNCTIONAL AND COMMUNICATIVE WRITTEN ENGLISH**  
 (Common to all Branches)

Code:121EN73

L	T	P/D	C
-	-	3	2

**Course Description**

This course provides a platform for the learners to practice written communication to excel and sustain in the industry. It emphasizes on the techniques of collecting, organizing, and presenting information in formal settings. The focus is also on the use of appropriate vocabulary using different formats and templates to communicate in different professional situations.

**Learning Objectives**

**By the end of the course, the students will be able to:**

1. Develop effective communication skills (spoken and written). Good oral and written communication skills
2. Perform all written tasks with clarity and coherence
3. Participate efficiently in group discussions
4. Take part effectively in various selection procedures adopted by the recruiters.
5. Develop Effective Presentation skills
6. Develop all-round personalities with a mature outlook to function effectively in different circumstances.

**UNIT-I : TECHNICAL WRITING**

- Introduction
- Techniques-pre-writing, writing, re-writing
- Objectives in technical writing: clarity, conciseness, accuracy, organisation, ethics.
- Exercises

**UNIT – II GROUP DISCUSSION**

- Introduction
- Personality Traits for GD
- Areas tested in GD – Content, Communication Skills, Group Dynamics and Leadership
- Tips on Group Discussion
- Group Discussion Etiquette – Dos and Don'ts

**UNIT-III : CORRESPONDENCE**

- Memos
- Letter writing in detail
- Resume'
- Exercises

**UNIT – IV BODY LANGUAGE**

- Introduction
- Importance of body language
- Body Language at work place
- Assessing the body language of others
- Understanding body language
- Improving one's body language

**UNIT-V REPORT STRATEGIES**

- The Summary
- Reports
- Proposals

**Textbooks:**

1. Technical Writing: Process and Product by Sharon J Gerson; Fifth edition. Pearson publishers.
2. Soft Skills: Know Yourself and know the World by Dr.K.Alex - S. Chand Publishing

**References:**

1. Prof. Kevnair's - Fluency Dictionaries
2. Kleiser Grenville-Common Errors in English:Aph publishing corporation
3. Shaw Harry and Collins- Errors in English Language and ways to correct them.
4. Body Language – Your success Mantra by Shalini Verma, S Chand, 2006
5. Strategies for Engineering Communication: Stevenson Susan and Steve Whitmore: Wiley, India.
6. How to build a better vocabulary – Nurnberg Maxwell & Morris Rosenblum: Grand Central Publishing
7. Six weeks to words of power –Funk Wilfred: W.R.Goyal Publishers & Distributors
8. Word power made easy – Norman Lewis
9. How to read better and faster: Norman Lewis, W.R.Goyal Publishers, New Delhi
10. Effective Technical Communication –Ashraf Rizvi.

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**Syllabus for B. Tech. II Year I semester**  
**Computer Science and Engineering**  
**Code:121EE91    BASIC ELECTRICAL ENGINEERING LAB**  
**(Common to CSE, IT, Mech)**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>-</b>	<b>-</b>	<b>3/2</b>	<b>1</b>

1. OC & SC tests on Single – Phase transformer (Predetermination of efficiency and regulation at given power factors).
2. Brake test on 3-phase induction motor (performance characteristics).
3. Speed control of DC shunt motor by
  - a) Armature Voltage Control
  - b) Field flux control method
4. Brake test on DC shunt motor
5. Swinburn's test on DC shunt machine
6. Load test on 1- phase transformer

**Code:121EC84**

**Syllabus for B. Tech. II Year I semester  
Computer Science and Engineering  
BASIC ELECTRONICS LAB  
(Common to CSE, IT, Mech)**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	3/2	1

1. Transistor CE Characteristics (Input and Output)
2. Full wave Rectifier with and without filters.
3. CE Amplifiers.
4. RC Phase Shift Oscillator
5. Class A Power Amplifier
6. Micro Processor



**Syllabus for B. Tech. II Year I semester  
Computer Science and Engineering  
Code: 121CS74 OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB  
(Common to CSE, IT, ECM)**

L      T      P/D      C  
-      -      3      2

**Lab Objective:**

- To make the student to learn an object oriented way of solving problems
- To teach the student to write programs in Java to solve the problems
- To introduce the student to GUI programming (AWT), Applets and Network Programming

1

- A) Write a program to print prime numbers up to a given number.
- B) Write a program to print roots of a quadratic equation  $ax^2+bx+c=0$ .
- C) Write a program to print Fibonacci sequence up to a given number.

2.

- A) Define a class to represent a bank account and include the following members Instance variables:
  - (i)Name of depositor
  - (ii)Account No
  - (iii)Type of account
  - (iv)Balance amount in the account

Instance Methods:

To assign instance variables(Constructors-Zero argument and parameterized)

1. To deposit an amount
2. To withdraw amount after checking the balance
- (iv) To display name and address

Define ExecuteAccount class in which define main method to test above class.

- B) In the above account class , maintain the total no. of account holders present in the bank and also define a method to display it. Change the main method appropriately.
- C) In main method of ExecuteAccount class , define an array to handle five accounts.
- D) In Account class constructor ,demonstrate the use of “this” keyword.
- E) Modify the constructor to read data from keyboard.
- F) Overload the method deposit() method (one with argument and another without argument)
- G) In Account class , define set and get methods for each instance variable.

Example:

For account no variable, define the methods  
getAccountNo() and setAccountNo(int accno)

In each and every method of Account class , reading data from and writing data to instance variables should be done through these variables.

3.

- A) Define Resister class in which define the following members:
 

Instance variables:  
resistance

Instance Methods:  
giveData():To assign data to the resistance variable  
displayData(): To display data in the resistance variable

constructors

Define subclasses for the Resistor class called SeriesCircuit and ParallelCircuit in which define methods : calculateSeriesResistance() and calculateParallelResistance() respectively.Both the methods should take two Resistor objects as arguments and return Resistor object as result.In main method , define another class called ResistorExecute to test the above class.

- B) Modify the above two methods which should accept array of Resistor objects as argument and return Resistor object as result.
- 4.
- A) Write a program to demonstrate method overriding.
  - B) Write a program to demonstrate the uses of “super” keyword (three uses)

- C) Write a program to demonstrate dynamic method dispatch(i.e .Dynamic polymorphism).
- 5)
- Write a program to check whether the given string is palindrome or not.
  - Write a program for sorting a given list of names in ascending order.
  - Write a program to count the no. of words in a given text.
- 6)
- Define an interface “GeomtricShape” with methods area() and perimeter() (Both method’s return type and parameter list should be void and empty respectively.  
Define classes like Triangle, Rectangle and Circle implementing the “GeometricShape” interface and also define “ExecuteMain” class in which include main method to test the above class
  - Define a package with name “sortapp” in which declare an interface “SortInterface” with method sort() whose return type and parameter list should be void and empty. Define “subsortapp” as subpackage of “sortapp” package in which define class “SortImpl” implementing “SortInterface” in which sort() method should print a message linear sort is used.  
Define a package “searchingapp” in which declare an interface “SearchInterface” with search() method whose return type and parameter list should be void and empty respectively.  
Define “searchingimpl” package in which define a “SearchImpl” class implementing “SearchInterface” defined in “searchingapp” package in which define a search() method which should print a message linear search is used.  
Define a class ExecutePackage with main method using the above packages(classes and its methods).
- 7) Modify the withdraw() method of Account class such that this method should throw “InsufficientFundException” if the account holder tries to withdraw an amount that leads to condition where current balance becomes less than minimum balance otherwise allow the account holder to withdraw and update the balance accordingly.
- 8)
- Define two threads such that one thread should print even numbers and another thread should print odd numbers.
  - Modify the Account class to implement thread synchronization concept.
  - Define two threads such that one thread should read a line of text from text file and another thread should write that line of text to another file.(Thread communication example).
  - Write a program to implement thread priority.
- 9) Design the user screen as follows and handle the events appropriately.
- Add Window

First Number

Second Number

Result
- ADD

SUBTRACT
- 10) Write a program to simulate a calculator
- 11) Write a Java program for handling mouse events and key events.
- 12) a) Write a program for handling window events.  
b) Develop an applet that displays a simple message..
- 13) Develop a client that sends data to the server and also develop a server that sends data to the client(two way communication)
- 14) Develop a client/server application in which client read a file name from keyboard and send the file name to the server , and server will read the file name from client and send the file contents to the client.

**Syllabus for B. Tech. II Year II semester**  
**Computer Science and Engineering**  
**DESIGN AND ANALYSIS OF ALGORITHMS**

Code: 121IT04

L	T	P/D	C
3	1	-	3

**UNIT I:**

Introduction: Algorithm, Pseudo 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.

**Objectives:**

At the end of this unit the student understands the importance of an algorithm, its complexity, and different measures to judge the efficiency of such algorithms.

**UNIT II:**

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

**Objectives:**

At the end of this unit the student will understand the divide and conquer technique and will be able apply that technique to various problems in the real life applications.

**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.

**Objectives:**

At the end of this unit the student will understand the greedy method and will be able apply that technique to various problems in the real life applications.

**UNIT IV:**

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.

**Objectives:**

At the end of this unit the student will understand the dynamic programming technique and will be able apply that technique to various problems in the real life applications.

**UNIT V:**

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

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

**Objectives:**

At the end of this unit the student will understand the backtracking, branch and bound techniques and will be able apply that technique to various problems in the real life applications.

**UNIT VI:**

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

**Objectives:**

At the end of this unit the student will understand the classification of problems in view of polynomial time complexity in an abstract way.

**TEXT BOOKS :**

1. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni and Rajasekharam, Galgotia publications pvt. Ltd.
2. Algorithm Design: Foundations, Analysis and Internet examples, M.T. Goodrich and R. Tomassia, John Wiley and sons.

**REFERENCES :**

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. Data structures and Algorithm Analysis in C++, Allen Weiss, Second edition, Pearson education.
4. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson education.
5. Algorithms – Richard Johnson baugh and Marcus Schaefer, Pearson Education

**Syllabus for B. Tech. II Year II semester**  
**Computer Science and Engineering**  
**MANAGERIAL ECONOMICS, FINANCIAL ANALYSIS**  
 (Common to ECE, EEE, ECM, CSE, IT)

**Code:121MB49**

L	T	P/D	C
3	1	-	3

**UNIT – I: INTRODUCTION TO MANAGERIAL ECONOMICS:**

Definition, Nature and Scope of Business Economics– Demand Analysis: Demand Determinants, Law of Demand and its exceptions. Elasticity of Demand and Demand Forecasting.

**UNIT – II: THEORY OF PRODUCTION AND COST ANALYSIS:**

Production Function – Isoquants and Isocosts, Internal and External Economies of Scale, Laws of returns. Cost Analysis: Cost concepts, different types of costs, cost control and cost efficiency. Break-even Analysis (BEA)- Determination of Break-Even Point (simple problems).

**UNIT – III: INTRODUCTION TO MARKETS:**

Market structures: Types of competition, Features of Perfect competition, Monopoly and Monopolistic Competition. Pricing strategies, transfer pricing and performance measurement, Price-Output Determination in case of Perfect Competition and Monopoly. Business Environment: forms of Business organization, Features of Joint Stock Company, Public Enterprises and their types. Liberalization, Globalization and Privatization (LPG).

**UNIT – IV: FUNDAMENTALS OF FINANCIAL ACCOUNTING:**

Concepts and conventions, principles of Double-Entry, Book Keeping, Journal, Ledger, Trial Balance, Final Accounts - Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments.

**UNIT – V: CAPITAL BUDGETING TECHNIQUES:**

Nature and scope of Capital Budgeting, Methods of Capital Budgeting: Traditional methods and Discounting Cash Flow methods.

**UNIT – VI: RATIO ANALYSIS:**

Introduction to Ratio analysis – Leverage ratios – Liquidity ratios – Turnover ratios – Profitability ratios, Du-point chart. (Simple problems)

**REFERENCES :**

1. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi.
1. Aryasri: Managerial Economics and Financial Analysis, 2/e, TMH, 2005.
2. H. Craig Peterson & W. Cris Lewis, Managerial Economics, PHI, 4th Ed.
3. Suma Damodaran, Managerial Economics, Oxford University Press.
4. Lipsey & Chrystel, Economics, Oxford University Press.

**Syllabus for B. Tech. II Year II semester  
Computer Science and Engineering**

Code: 121IT03

**DATA BASE MANAGEMENT SYSTEMS**

L	T	P/D	C
3	1	-	3

**UNIT I :**

Data base System Applications, data base System VS file System – View of Data – Data Abstraction – Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor, History of Data base Systems. Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model – Conceptual Design for Large enterprises.

**Objective:** At the end of this unit, students should be able to know about the applications of DBMS, steps in designing data base and have the basic idea of Database Management System architecture.

**UNIT II :**

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

**Objective :** At the end of this unit, students should be able to know about the mathematical languages used in designing relational models – relational calculus and algebra.

**UNIT III :**

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

**Objective:** At the end of this unit, students should be able to write complex sql queries to create database and manipulate the data.

**UNIT IV :**

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

**Objective:** At the end of this unit, students should be able to know about the problems caused by redundancy and to eliminate duplicate information from the database by using different types of normal forms.

**UNIT V :**

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.

**Objective:** At the end of this unit, students should be able to know about the properties of transactions, different techniques to ensure the serializability and different algorithms to recover data in case of system crash.

**UNIT VI :**

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

**Objective:** At the end of this unit, students should be able to know about physical level configuration of data using Indexed Sequential Access Method and B+ trees.

**TEXT BOOKS :**

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

**REFERENCES :**

1. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate Pearson Education
3. Introduction to Database Systems, C.J.Date Pearson Education

**Syllabus for B. Tech. II Year II semester  
Computer Science and Engineering  
DATA COMMUNICATIONS**

**Code:121EC32**

(COMMON TO CSE, IT)

L	T	P/D	C
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**UNIT - I**

Introduction to Data Communications; Networks, the Internet, protocols and standards. Network models: layered tasks, the OSI model, Layers in the OSI model, TCP/IP protocol suite, addressing

**UNIT – II**

Physical layer and media: Data and signals: Analog and digital, periodic analog signals, digital signals, Transmission impairment, Data rate limits, Performance.

Digital transmission: Digital – to – digital conversion, Analog – to – digital conversion, Transmission modes.

Analog transmission: Digital – to – analog conversion, Analog – to – analog conversion.

Bandwidth utilization: Multiplexing and spreading; Multiplexing, Spread spectrum

**UNIT– III**

Transmission media: Guided media, and unguided media

Switching: Circuit – switched networks, Datagram networks, Virtual – circuit networks, Structure of a switch.

**UNIT– IV**

Data link layer: error detection and correction; Introduction, Block coding, Linear block codes, Cyclic codes, Checksum

Data link control: Framing, Flow and error control, Protocols, Noiseless channels, Noisy channels, HDLC, Point – to – point protocol

**UNIT – V**

Multiple access: Random access, Controlled access, Channelization, Wired LANs: Ethernet: IEEE standards, Changes in the standard, Fast Ethernet, Gigabit Ethernet.

Wireless LANs: IEEE 802.11, Bluetooth, cellular telephone and satellite networks.

**UNIT – VI**

Connecting LANs, backbone networks, and virtual LANs: Connecting devices, Backbone networks, Virtual LANs. Virtual Circuit Networks: Frame Relay, ATM, and ATM LANs.

**TEXTBOOKS:**

Data Communications and Networking, Behrouz A Forouzan, Fourth Edition 2006, Tata McGraw Hill, New Delhi, India.

**REFERENCE BOOK:**

Data Communications, William Stallings, Seventh edition.



**Syllabus for B. Tech. II Year II semester  
Computer Science and Engineering  
COMPUTER ORGANIZATION & MICROPROCESSOR AND  
INTERFACING**

Code:121EM08

L	T	P/D	C
3	1	-	3

**Objective: To understand the basics of computer, microprocessors and study the advances that are taking place in this area.**

**UNIT-I**

Fundamentals of Digital Computers, Different blocks of a computer, Number Systems, Binary Arithmetic, Boolean Algebra, Map Simplifications, Gates -Combinational Circuits – Half Adder, Full Adder, Decoder, Multiplexer, Sequential Circuits – Registers, Shift Registers, Counters.

**Outcome: Block diagram of a computer and the detailed understanding of different functional blocks.**

**UNIT-II**

8086 CPU, Arithmetic and Logic Unit, 8086-Instruction Sets, Instruction cycle, Addressing Modes and formats, Instruction Pipeline, Processor organization, Register organization, Control Unit Operation.

**Outcome: Assembly language of MASM, instruction set and addressing modes of 8086.**

**UNIT-III**

Assembly language programs for 8086 involving logical, Branch & Call instructions, sorting, evaluation of arithmetic expressions, string manipulation.

**Outcome: Writing simple assembly language programs for 8086.**

**UNIT-IV**

Memory: Memory hierarchy, Internal Memory, External Memory, Memory Organization, Associative Memory, Virtual Memory, Cache Memory.

**Outcome: Details of main memory and cache memory.**

**UNIT-V**

External Devices, I/O modules, Programmed I/O, Interrupt Driven I/O, Direct Memory Access, I/O Channels and processors, Asynchronous Data Transfer. Interrupt and interrupt vectors.

**Outcome: Details of interrupts, interrupt vectors, DMA operation and I/O device handling methods.**

**UNIT-VI**

Reduced Instruction Set Computers, Complex Instruction Set Computers, Super Scalars, Vector, Parallel Cluster, Distributed Computers.

**Outcome: Details of advanced computer architectures.**

**TEXT BOOKS:**

1. "Computer Organization and Architecture", 7th Edn. 2006, PHI- William Stallings
2. Digital Design, 4th Edn, 2007, Pearson- M. Moris Mano and Michael D. Ciletti.
3. Advanced microprocessor and Peripherals – A.K.Ray and K.M.Bhurchandi, TMH, 2000.

**REFERENCE BOOKS:**

1. "Computer Architecture and Organisation", 3rd Edn., 1998, McGraw Hill - Hayes, J.P.
2. "Computer System Architecture" –3rd Edition-Pearson Education - Morris Mano -
3. "Computer Organization" – Car Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.
4. "Fundamentals or Computer Organization and Design", - Sivaraama Dandamudi Springer Int. Edition.

**Syllabus for B. Tech. II Year II semester**  
**Computer Science and Engineering**  
**PROBABILITY AND STATISTICS**  
 (Common to All Branches)

Code: 121MA07

L	T	P/D	C
3	1	-	3

**UNIT I****Probability:**

Sample spaces and Events – Counting, Probability, The Axioms of probability, some Elementary Theorems, Conditional probability – Baye’s Theorem .

**UNIT II****Probability Distributions:**

Random variable – Discrete and continuous, Distribution function, Expectation and Probability distributions - Binomial, Poisson and normal distributions – related properties.

**UNIT III****Sampling Distributions:**

Populations and samples, Sampling distribution of the Mean (known ) and Sampling distribution of the mean (unknown), proportions, sums and differences . Applications of central Limit Theorem. Estimation, Point estimation, Interval estimation and Bayesian estimation

**UNIT IV****Inferences Concerning Means and Proportions :**

Tests of Hypotheses, type –I and type-II errors, , Hypotheses concerning means and proportions for large size samples

**UNIT V**

Test of significance-Student t-test, F-tests,  $\chi^2$  test, test for goodness of fit, independence of attributes.

**UNIT VI****Linear Programming:**

Introduction, Formulation of LPP, Graphical method, Simplex method.

**Text Books :**

1. Advanced Engineering Mathematics, S. R. K. Iyengar and R.K. Jain, Narosa Publishing House, London, 2002.
2. Higher Engineering Mathematics, B.S. Grewal, Khanna Publications, New Delhi.
3. Engineering Mathematics, B. V. Ramana, Tata McGraw Hill Publishing Company Ltd.
4. Probability and Statistics for Engineers: Miller and John E. Freund, PHI Publishers, 6<sup>th</sup> Edition.

**REFERENCE BOOKS:**

1. Fundamentals of Mathematical Statistics: Gupta and Kapoor – S. Chand and Co.
2. Probability and Statistics for Engineers- Walpole and Meyer.
- 3, Probability and Statistics ,Dr.M. Venkata Krishna, B.S Publications

**Syllabus for B. Tech. II Year II semester**  
**Computer Science and Engineering**  
**EFFECTIVE ENGLISH COMMUNICATION AND SOFT SKILLS**  
**(Common to all Branches)**

Code: 121EN74

L	T	P/D	C
-	-	3	2

**Course Description**

This course empowers the students for career opportunities, enhancing professional and personal growth. Effective communication and interpersonal skills are crucial to increase employment opportunities and to compete successfully in the business environment.

Soft skills provide students with a strong conceptual and practical framework to build, develop and manage teams. They play an important role in the development of the students' overall personality, thereby enhancing their career prospects. Training in soft skills provides strong practical orientation to the students and helps them in building and improving their skills in communication, the effective use of English, business correspondence, presentations, team building, leadership, time management, group discussions, interviews, and inter-personal skills. This training also helps students in career visioning and planning, effective resume writing and dealing with placement consultants and headhunters.

The training is conducted in a very informal, interesting and interactive manner, which gives ample scope for the students to interact with one other and face a wide variety of issues, topics, and situations that they are likely to come across as entry-level managers.

**Learning Objectives:**

**By the end of the soft skills training program, the students will be able to:**

- Develop effective communication skills (spoken and written).
- Develop effective presentation skills.
- Become adept using electronic communication
- Conduct effective business correspondence and prepare good business reports.
- Become self-confident individuals by mastering inter-personal skills, team management skills and leadership skills.
- Develop all-round personalities with a mature outlook to function effectively in different circumstances.
- Develop broad career plans, evaluate the employment market, identify the organizations to get good placement, match the job requirements and skill sets.

**UNIT-I ELECTRONIC COMMUNICATION**

- E-correspondence
- E-mail etiquette
- E-resume'; online job applications
- Letter of application
- Exercises

**UNIT – II SOFT SKILLS**

- Introduction
- Building attitude – personality traits
- Five aspects of soft skills – communication skills, problem solving skills, leadership skills, work ethics and team work
- Learning soft skills
- Impression management
- Goal setting Time management

**UNIT – III: DEVELOPING POSITIVE ATTITUDE**

- Introduction
- What is positive attitude?

- The power of positive attitude
- Positive thinking- the key to success
- Negative thinking
- Types of negative thinking
- The causes of negative attitude
- Consequences of negative attitude
- How to change negative attitude

## UNIT – IV ETIQUETTE AND MANNERS

### ETIQUETTE

- Introduction
- Modern etiquette
- Benefits of etiquette
- Classification of etiquette
- Telephone Etiquette
- Email Etiquette.

### MANNERS

- Introduction
- Poor manners noticed in youth – why should good manners be practiced?
- Practicing good manners
- Professional manners
- Social skills (manners)

## UNIT – V INTERVIEW SKILLS

- Introduction
  - On the day of interview
  - Dress code at interview
  - Job interview
- Why an interview?
- Types of interview
- Dress code for an interview
- Interview etiquette
- Types of questions asked
- Telephonic interview
- Possible reasons for rejecting a candidate
- Preparation before interview – basic tips.

### Textbooks:

1. Technical Writing: Process and Product by Sharon J Gerson; Fifth edition. Pearson Publishers.
2. Soft Skills: Know Yourself and know the World by Dr.K.Alex - S. Chand Publishing .

### References:

- 1.Prof. Kevnair's - Fluency Dictionaries
- 2.Kleiser Grenville-Common Errors in English:Aph publishing corporation
- 3.Shaw Harry and Collins- Errors in English Language and ways to correct them.
- 4.Body Language – Your success Mantra by Shalini Verma, S Chand, 2006
- 5.Strategies for Engineering Communication: Stevenson Susan and Steve Whitmore: Wiley, India.
- 6.How to build a better vocabulary – Nurnberg Maxwell & Morris Rosenblum: Grand Central Publishing
- 7.Six weeks to words of power –Funk Wilfred: W.R.Goyal Publishers & Distributors
- 8.Word power made easy – Norman Lewis
- 9.How to read better and faster: Norman Lewis, W.R.Goyal Publishers, New Delhi
- 10.Effective Technical Communication –Ashraf Rizvi

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**Syllabus for B. Tech. II Year II semester  
Computer Science and Engineering  
Code:121CS73                      COMPREHENSIVE VIVA I**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	-	<b>1</b>

There shall be a Comprehensive Viva-Voce in II year II Semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of an external examiner, Head of the Department and 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 up to II Year. The Comprehensive Viva-Voce is valued for 50 marks by the Committee. There are no internal marks for the Comprehensive Viva-Voce.

**Syllabus for B. Tech. II Year II semester  
Computer Science and Engineering  
DATABASE MANAGEMENT SYSTEMS LAB**

**Code: 121IT75**

L	T	P/D	C
-	-	3	2

1. Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.  
Example: - Select the roll number and name of the student who secured fourth rank in the class.
3. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
4. Queries using Conversion functions (to\_char, to\_number and to\_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next\_day, add\_months, last\_day, months\_between, least, greatest, trunc, round, to\_char, to\_date)
5. i) Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)  
ii) Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.
6. Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.
7. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE- APPLICATION ERROR.
8. Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
9. Program development using creation of stored functions, invoke functions in SQL Statement and write complex functions.
10. Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
11. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
12. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

**TEXT BOOKS:**

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

**Syllabus for B. Tech. II Year II semester  
Computer Science and Engineering  
MICRO PROCESSORS AND INTERFACING LAB**

<b>CODE: 121EM74</b>	<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
	-	-	3	2

**LIST OF PROGRAMS**

**Introduction to MASM/TASM Assembler**

**Familiarization with 8086 Kit**

**Experiment I, II**

**Write ALP and execute the program to**

1. Add two 8-bit numbers
2. Add two 16-bit numbers
3. Add two 32-bit numbers
4. Subtract two 8-bit numbers
5. Subtract two 16-bit numbers
6. Subtract two 32-bit numbers
7. Multiply two 8-bit numbers
8. Multiply two 16-bit numbers
9. Perform 8-bit division
10. Perform 16-bit division
11. Find square of a number
12. Find cube of a number
13. Exchange two numbers

**Experiment III**

**Write ALP and execute the program to**

14. Add a given series of numbers
15. Find average of a given series of numbers
16. Add a constant to a series of values in memory & store the result back in memory
17. Find sum of squares of a given series of numbers
18. Find sum of cubes of a given series of numbers
19. Display squares of a given series of numbers in memory

**Experiment IV**

**Write ALP and execute the program to**

20. Display cubes of a given series of numbers in memory
21. Find factorial of a given number
22. Find largest number from a given series of numbers
23. Find smallest number from a given series of numbers

**Experiment V**

**Write ALP and execute the program to**

24. Sort a series of given numbers in ascending order
25. Sort a series of given numbers in descending order
26. Find whether the given number is even or odd number
27. Find the no. of odd & even numbers from a given series of numbers

**Experiment VI**

**Write ALP and execute the program to**

28. Find sum of all even no.s from a given series of even and odd numbers
29. Find sum of all odd no.s from a given series of even and odd numbers
30. Find GCD of two given numbers
31. Find LCM of two given numbers
32. Perform one byte BCD addition
33. Perform one byte BCD subtraction

**Experiment VII**

**Write ALP and execute the program to**

34. Produce packed BCD from two ASCII characters
35. Convert decimal number to binary
36. Convert a binary number to a decimal number
37. Add two 3 x 3 matrices

#### **Experiment VIII**

##### **Write ALP and execute the program to**

38. Display Fibonacci series
39. Move a string of data bytes from one location to another
40. Concatenate two strings
41. Reverse a given string

#### **Experiment IX**

##### **Write ALP and execute the program to**

42. Compare two strings
43. Find length of a given string
44. Find whether the given byte is in the string or not
45. Insert an element in a given string

#### **Experiment X**

##### **Write ALP and execute the program to**

46. Display a message on the screen of a microcomputer
47. Fill the screen with any character pressed from the keyboard

#### **Experiment XI**

##### **Write ALP and execute the program to**

48. Interface a stepper motor
49. Generate a triangular wave

#### **Experiment XII**

##### **Write ALP and execute the program to**

50. Generate a square wave
51. Generate a saw tooth waveform

#### **Experiment XIII**

##### **Write ALP and execute the program to**

52. Interface a keyboard
53. Interface seven segment display



a	b	c	d	e	f	g	h	i	j	k	l	m
					x						x	

**Syllabus for B. Tech. III Year I semester**  
**Computer Science & Engineering**  
**Open Elective - I**  
**BASIC SPANISH LANGUAGE**  
**(Common to all branches)**

**Code: 3HC51**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>

**Objectives:** The objectives of this course almost correspond to the A1 level of the Common European Framework of Reference for languages

**A) Aims and Objectives of the Course**

- i) To develop the following skills: Listening, speaking, reading & writing.  
Learners should be able to
  - a) Listen and comprehend elementary structures of the spoken language.
  - b) Participate in simple conversations in different situations of every day life.
  - c) Read and understand simple texts.
  - d) Write sentences and short paragraphs on general topics and situations.
  
- ii) To develop creative aspect in language learning i.e. the ability to work out different patterns and combinations with the help of basic grammatical structures and lexical items.
  
- iii) To introduce the learners to aspects of life and culture of Spanish and Latin American people.

a	b	c	d	e	f	g	h	i	j	k	l	m
					x						x	

**Syllabus for B. Tech. III Year I semester  
Computer Science & Engineering  
Open Elective - I  
BASIC FRENCH LANGUAGE  
(Common to all branches)**

**Code: 3HC41**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>

**UNITE – 1**  
VOCABULAIRE

**UN PRINTEMPS A PARIS**

: Professions et nationalités, vie quotidienne et loisirs,  
Descriptions physiques et psychologiques, nombres cardinaux.

**UNITE – 2**  
GRAMMAIRE

: Articles définis et indéfinis, genre et nombre des noms et des  
Adjectifs, interrogation et négation, conjugaison du présent.

PHONETIQUE

: Intonation, liaison, voyelles orales et nasales.

**UNITE – 3**  
COMMUNICATION

: Faire connaissance, inviter et répondre à une invitation, décrire  
les personnes.

CIVILISATION

: Paris, monuments et lieux publics. La vie de quatre parisiens  
De professions différentes.

**UNITE- 4**  
VOCABULAIRE

**AVENTURE EN BOURGOGNE**

: Logement et nourriture, vêtements et couleurs, fêtes et Faits divers, nombres  
ordinaux.

GRAMMAIRE

: Articles partitifs, adjectifs démonstratifs et possessifs, Prépositions et adverbes de  
quantité et de lieu, pronoms Toniques, l'impératif, verbes pronominaux

**UNITE – 5**  
PHONETIQUE  
COMMUNICATION

: Intonation, semi-voyelles, liaison, consonnes sonores et sourdes

: Exprimer l'ordre et l'obligation, demander et commander, évaluer et apprécier,  
féliciter et remercier.

**UNITE – 6**  
CIVILISATION :

Une région de France : la Bourgogne, vie quotidienne à la campagne.

**In addition Passé Composé will be introduced in the Unite 2**

Text Book  
(Unit 1 & Unit 2)

: LE NOUVEAU SANS FRONTIERES – 1 (Text Book and  
Exercise Book published by CLE INTERNATINAL – Phillippe  
Dominique et al.

**SCHEME OF EXAMINATION:**

Internal Assessment	30 marks
Written Examination	- 20 marks
Viva Voce	- 10 marks

Final Written Examination: Grammar, Communication & Translation 70marks

Written Examination	- 50 marks	Viva voce	-20 marks
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a	b	c	d	e	f	g	h	i	j	k	l	m
					x						x	

**Syllabus for B. Tech. III Year I semester**  
**Computer Science & Engineering**  
**BASIC GERMAN LANGUAGE**  
**OPEN ELECTIVE - I**  
**(Common to all branches)**

**Code: 3HC46**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>

DEUTSCH FUR ANFANGER (German for beginners)

1. OBJECTIVE: To introduce the learners to basic German and to acquaint them with German culture. The learners should be able to express themselves in simple sentences on a few day-to-day situations.
2. DURATION: I-Semester
3. CLASSROOM STRENGTH: preferably not exceeding 30
4. MODE: Face-to-Face classroom interaction
5. TEACHING HOUSE: 2 HOURS and 2 TUTORIALS / WEEK
6. COURSE CONTENT:

**Unit 1**

- Definite and indefinite articles (including negation)
- Noun: Gender and plural forms, cases (nominative, accusative, dative and genitive)

**Unit 2**

- Verb: strong & weak verbs, verbs with separable and inseparable prefixes, modal verbs, position of verb in the main and subordinate clauses, auxiliary verbs, reflexive verbs in accusative and dative cases, imperative constructions.

**Unit 3**

- Pronouns: personal, possessive, reflexive, interrogative and demonstrative
- Prepositions: with the accusative, dative and with both these cases

**Unit 4**

- Adjective: declension with the
  - Indefinite article
  - Definite article
  - Without article
  - With the indefinite pronoun
  - Degrees of comparison (also adverbs), ordinal numbers, adjectives as nouns
- Conjunctions: subordinating and coordinating with respect to the position of the verb

**Unit 5**

- Pretaritim of sein and haben
- Perfect tense

**Unit 6**

- Negatin: of a sentence and of words therein.
- Sentence structure: general principles observed in German language.

**READING LIST:** One of the following books shall be used (depending upon the availability of the book)

Text book to be recommended out of the following.

- a) Braun, K., Nieder, L., Schmoer, F.1977. Deutsch als Fremdsprache I. A. Ernst Klett Verlag, Stuttgart.
- b) Schulz, D., Griesbach, H., 1968. Deutsche Sprachlehre für Ausländer. Max Hueber Verlag, München.
- c) Hieber, W. 1987. Lernziel Deutsch (Special Indian Edition).Max Hueber Verlag, München
- d) Neuneer, G., et al. 1979. Deutsch Aktiv. Langenscheidt, Berlin
- e) Schapers, R., et al. 1980. Grundkurs Deutsch. I. Verlag für Deutsch, München
- f) Schapers, R., et al. 1981 Deutsch 2000 I. Max Hueber Verlag, München
- g) Haussermann, U. et al. 1995 Sprachkurs Deutsch. Verlag Moritz Diesterweg, Frankfurt/Main.
- h) Müller, M., et al. 2001 Moment mal ! Langenscheidt, Berlin.
- i) Jutta Müller, Thomas Storz, 2006. Laguna. Heuber Verlag, Ismaning, Deutschland.
- j) Hermann Funk, Christina Kuhn, Oliver Bayerlein., Studio d A 1. 2005 Comelsen Verlag, Berlin.
- k) Rosa-Marie Dallapiazza, Eduard von Jan, Till Schönherr, unter Mitarbeit von Jutta Orth-Chambah. Tangram aktuell 1 – Lektion 1 – 4, Lektion 5 – 8 2009. Max Hueber Verlag, München.

**SCHEME OF THE EXAMINATION:**

Duration of written papers: 3 hours each

Paper I :Grammar and Translation (German > English and vice versa) 100 marks

Paper II: Reading comprehension, letter writing / short essay. 100 marks

Paper III: Viva voce

100 marks

**The minimum marks required for passing in EACH paper: 40 / 100**

a	b	c	d	e	f	g	h	i	j	k	l	m
		x	x					x	x			

**Syllabus for B. Tech. III Year I semester - CSE**  
**OPERATIONS RESEARCH**  
**(OPEN ELECTIVE – I)**

**Code: 3BC16**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>

**UNIT I**

**INTRODUCTION:** Development – Definition– Characteristics and Phases – Types of models – operation Research models – applications.

**LINEAR PROGRAMMING PROBLEM-** Formulation – Graphical solutions, Simplex method, Artificial variables techniques -Two–phase method, Big-M method -Degeneracy, Duality Principle.

**UNIT II**

**TRANSPORTATION PROBLEM** – Formulation – Optimal solution, unbalanced transportation problem – Degeneracy.

**ASSIGNMENT PROBLEM** – Formulation – Optimal solution - Variants of Assignment Problem- Unbalanced, Traveling Salesman problem.

**UNIT III**

**SEQUENCING** – Introduction – Flow Shop sequencing – n jobs through two machines – n jobs through three machines – Job shop sequencing – two jobs through ‘m’ machines.

**REPLACEMENT:** Introduction – Replacement of items that deteriorate with time – when money value is not counted and counted – Replacement of items that fail completely, Group replacement.

**UNIT IV**

**THEORY OF GAMES:** Introduction – Pure strategies-Minimax (maximin) – Criterion and optimal strategy – Solution of games with saddle points – Mixed Strategies-Rectangular games without saddle points- Dominance principle – 2 X 2 games , m X 2 & 2 X n games -Graphical method.

**UNIT V**

**WAITING LINES:** Introduction – Single Channel – Poisson arrivals – exponential service times – with infinite population and finite population models– Multichannel – Poisson arrivals – exponential service times with infinite population single channel Poisson arrivals.

**INVENTORY:** Introduction – Single item Deterministic models without shortages– Single item inventory models with one price break and multiple price breaks – Stochastic models – demand may be discrete variable or continuous variable – Instantaneous production. Instantaneous demand and continuous demand and no set up cost.

**UNIT VI**

**SIMULATION:** Definition – Types of simulation – phases of simulation– applications of simulation – Inventory and Queuing problems – Advantages and Disadvantages – Computers in Simulation.

**DYNAMIC PROGRAMMING:** Introduction – Bellman’s Principle of optimality – Applications of dynamic programming- shortest path problem -capital budgeting problem — linear programming problem.

**TEXT BOOKS:**

1. Operations research / Hira & Gupta
2. Operation Research /J.K.Sharma/MacMilan publishers.

**REFERENCES:**

1. Operations Research / S.D.Sharma/Kedarnath publishers
2. Operations research/V.K.Kapoor

a	b	c	d	e	f	g	h	i	j	k	l	m
				x						x		x

**Syllabus for B. Tech. III Year I semester**  
**Computer Science and Engineering**  
**ENTREPRENEURSHIP**  
**(OPEN ELECTIVE – I)**

**Code: 3ZC04**

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**3     -     -     3**

**Course Objective:** The objective of the course is to make students understand the nature of Entrepreneurship, and its importance to business to the engineering students, which will allow them to get the required intuition and interest in starting their own start-up's

**UNIT I**

**INTRODUCTION TO ENTREPRENEURSHIP:** Definition of entrepreneurship, Evolution of entrepreneurship, Classification of Entrepreneurs, Entrepreneurship as a Process, Entrepreneurial Propensity, Benefits and Drawbacks of Entrepreneurship. Characteristics of entrepreneur, Qualities and skills, functions of entrepreneur. Women Entrepreneurs, Problems and opportunities.

**UNIT II**

**FORMS OF ENTREPRENEURSHIP:** Small Business, Importance in Indian Economy, Types of ownership, sole trading, partnership, Joint Stock Company, Important features of various types of businesses, corporate entrepreneurship, entrepreneurship, Role of Government in the promotion of Entrepreneur, State Enterprises in India.

**UNIT III**

**EXPLORING OPPORTUNITIES AND STRATEGIES:** Opportunity Analysis, SWOT Analysis, Internal and External Environment. First-Mover disadvantages, Risk Reduction strategies, Market scope strategy, Imitation strategies and Managing Newness, Marketing strategies for start-ups, Pitfalls in start-up analysis. Taxes as bottlenecks for the growth of new start-up's, subsidies and incentives given to save taxes.

**UNIT IV**

**BUSINESS PLAN AND FEASIBILITY STUDIES:** Preparation of an Effective Business Plan, Contents of a Business Plan, Detailed discussion of the business plan. Model Business, Feasibility study, Environmental scanning, Economic Analysis, Industry Analysis, and Competitive Analysis. Write Up for an effective feasible and bankable report.

**UNIT V**

**INNOVATIONS AND PROTECTION OF IDEAS:** Creativity process in developing Innovation, breakthrough innovations and its consequences on the society. Inspiring innovations. New product ideas, Idea generation methods, quality gates, prototype building, Test marketing. Protecting the ideas, Applying for Intellectual Property rights, Patents, Copyrights, Trademarks, Geographical Indicators. Introduction to World Intellectual Property Organization (WIPO).

**UNIT VI**

**FINANCIAL ASPECTS OF THE ENTREPRENEURSHIP:** Sources of Capital, Debt and Equity, Commercial Banks, Angel Investors, Venture capitalist, IDBI, ICICI, IFCL, SFC'c. Government Grants and Subsidies. Registration Process and the documentation required. Government Agencies helping in Registration Process. DIC, NSIC and other Central and State Institutions.

**REFERENCES:**

- H. Nandan, Fundamentals of Entrepreneurship, Prentice Hall of India, First Edition, New Delhi, 2007.
- Robert D Hisrich, Michael P Peters, Dean A Shepherd, Entrepreneurship, Sixth Edition, New Delhi, 2006.
- Alfred E. Osborne, Entrepreneur's Toolkit, Harvard Business Essentials, HBS Press, USA, 2005.
- Madhurima Lall, Shikha Sahai, Entrepreneurship, Excel Books, First Edition, New Delhi, 2006.
- S.S. Khanka, Entrepreneurial Development, S. Chand and Company Limited, New Delhi, 2007.
- Thomas W. Zimmerer, Norman M. Scarborough, Essentials of Entrepreneurship And Small Business Management, Fourth Edition, Pearson, New Delhi, 2006
- S.R. Bhowmik, M. Bhowmik, Entrepreneurship-A tool for Economic Growth And A key to Business Success, New Age International Publishers, First Edition, (formerly Wiley Eastern Limited), New Delhi, 2007

a	b	c	d	e	f	g	h	i	j	k	l	m
	x		x									

**Syllabus for B. Tech. III Year I semester  
Computer Science and Engineering  
VLSI DESIGN  
(OPEN ELECTIVE – I)**

**Code: 3DC07** **L T P/D C**  
**3 - - 3**

**UNIT I**

**INTRODUCTION :** Introduction to IC Technology – MOS, PMOS, NMOS, CMOS & BiCMOS technologies- Oxidation, Lithography, Diffusion, Ion implantation, Metallisation, Encapsulation, Probe testing, Integrated Resistors and Capacitors.

**UNIT II**

**BASIC ELECTRICAL PROPERTIES :** Basic Electrical Properties of MOS and BiCMOS Circuits: Ids-Vds relationships, MOS transistor threshold Voltage, gm, gds, figure of merit  $\eta_0$ ; Pass transistor, NMOS Inverter, Various pull ups, CMOS Inverter analysis and design, Bi-CMOS Inverters.

**UNIT III**

**VLSI CIRCUIT DESIGN PROCESSES:** VLSI Design Flow, MOS Layers, Stick Diagrams, Design Rules and Layout, 2  $\mu$ m CMOS Design rules for wires, Contacts and Transistors Layout Diagrams for NMOS and CMOS Inverters and Gates, Scaling of MOS circuits, Limitations of Scaling.

**UNIT IV**

**GATE LEVEL DESIGN:** Logic Gates and Other complex gates, Switch logic, Alternate gate circuits, Basic circuit concepts, Sheet Resistance RS and its concept to MOS, Area Capacitance Units, Calculations -  $\square$   $\square$ - Delays, Driving large Capacitive Loads, Wiring Capacitances, Fan-in and fan-out, Choice of layers

**UNIT V**

**SUBSYSTEM DESIGN:** Subsystem Design, Shifters, Adders, ALUs, Multipliers, Parity generators, Comparators, Zero/One Detectors, Counters, High Density Memory Elements.

**UNIT VI**

**SEMICONDUCTOR INTEGRATED CIRCUIT DESIGN:** PLAs, FPGAs, CPLDs, Standard Cells, Programmable Array Logic, Design Approach.

**CMOS TESTING :** CMOS Testing, Need for testing, Test Principles, Design Strategies for test, Chip level Test Techniques, System-level Test Techniques, Layout Design for improved Testability.

**TEXTBOOKS:**

1. Essentials of VLSI circuits and systems – Kamran Eshraghian, Eshraghian Douglas and A. Pucknell, PHI, 2005 Edition.
2. Principles of CMOS VLSI Design - Weste and Eshraghian, Pearson Education, 1999.

**REFERENCES:**

1. Chip Design for Submicron VLSI: CMOS Layout & Simulation, - John P. Uyemura, Thomson Learning.
2. Introduction to VLSI Circuits and Systems - John .P. Uyemura, JohnWiley, 2003.
3. Digital Integrated Circuits - John M. Rabaey, PHI, EEE, 1997.
4. Modern VLSI Design - Wayne Wolf, Pearson Education, 3rd Edition, 1997.
5. VLSI Technology – S.M. SZE, 2<sup>nd</sup> Edition, TMH, 2003.



a	b	c	d	e	f	g	h	i	j	k	l	m
							x			x		

**Syllabus for B. Tech. III Year I semester**  
**Computer Science and Engineering**  
**PRODUCT DESIGN & SERVICE**  
**(OPEN ELECTIVE – I)**

Code: 3B515

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>

**UNIT I****Introduction to Design Thinking:**

Product Research, Art, Design and Society - Creativity and Brain-storming for Design – Nature of Technology Entrepreneurship, Characteristics/Qualities, Skills of Technology Entrepreneur, IPR relating to Designs and Registration of Industrial Designs

**UNIT II****Introduction to Service Design:**

Challenges & Critical Success Factors, Requirements Engineering, Service Design Process, Tools for Service Design, Mapping the Customer Journey, Tools for Innovation, Conjoint Analysis, Voice of Customer Methods.

Product Features, Attributes of a Good Design, Design Elements: Usability, Aesthetics, Functionality

**UNIT III****Introduction to Product Design:**

Product Architecture and Modularity, Product Innovation, Products and Product Suites, Product Development, Process Development, Value Engineering, Product Design Specifications, Principles of Ergonomics.

**UNIT IV****Design for Manufacturing**

Re-manufacturing, Sustainability, Design for Environment, Reliability and Robustness, Safety Considerations, Quality Aspects, Design for Serviceability.

**UNIT V****System & Engg. Design:**

Physical Models and Experimentation, Prototype development, Bill of Materials, Interface of Materials, Processes and Designs, Codes & Standards

**UNIT VI****Design Methodology**

Live Design & Design Tools – Design Structure, Matrix Modeling, Product Metrics, Concurrent Engineering, CAD/CAM, Design Review

**RECOMMENDED TEXT BOOKS:**

- 1) Kevin Otto & Kristie Wood, “Product Design”, Pearson Education, 2011
- 2) Prashant Kumar, “Creativity, Concepts and Usability”, PHI, 2012

**ADDITIONAL REFERENCES:**

- 1) Yousef Haik, “Engg Design Process” Thomson Brodes / Codel.
- 2) N F M Roozenburg I. Eekels, “Product Design Fundamentals and Methods” Wiley Publications.
- 3) Nigel Cross, “Engineering Design Methods: Strategies for Product Design”, Wiley, 2008.

**Syllabus for B. Tech. III Year I semester**  
**Computer Science and Engineering**  
**OPERATING SYSTEMS**

a	b	c	d	e	f	g	h	i	j	k	l	m
	x		x					x	x			

**Code: 3EC07**

**L T P/D C**  
**3 1 - 3**

**UNIT I**

Introduction: Introduction to Operating System Concepts (including Multitasking, multiprogramming, multi user, Multithreading etc.), Types of Operating Systems: Batch operating system, Time-sharing systems, Distributed OS, Network OS, Real Time OS; Various Operating system services, architecture, System programs and calls.

**UNIT II**

Process Management: Process concept, process scheduling, operation on processes; CPU scheduling, scheduling criteria, scheduling algorithms -First Come First Serve (FCFS), Shortest-Job-First (SJF), Priority Scheduling, Round Robin(RR), Multilevel Queue Scheduling.  
 Engg. Applications – Process scheduling in Windows, Linux.

**UNIT III**

Process-Synchronization & Deadlocks: Critical Section Problems, semaphores; methods for handling deadlocks-deadlock prevention, Avoidance & Detection; Deadlock recovery.  
 Memory Management: Logical & Physical Address Space, swapping, Contiguous memory allocation.

**UNIT IV**

Memory Management: Paging and Segmentation techniques, Segmentation with paging;  
 Virtual memory: Demand Paging, Page-Replacement Algorithms, Thrashing.  
 Engg. Applications – Memory management in Windows, Linux.

**UNIT V**

File System: Different types of files and their access methods, directory structures, various allocation methods, disk scheduling and management and its associated algorithms.

**UNIT VI**

I/O Systems: I/O Hardware, Application I/O Interface, Kernel, Transforming I/O requests, Performance Issues.  
 Protection and Security: Goals of protection, Principles of protection, Access matrix, Access control list, Capability List. Security Attacks, Program threats,

**TEXT BOOKS:**

1. Operating System Concepts by Silberchatz Galvin, 8<sup>th</sup> edition.
2. Modern Operating Systems by A. Tanenbaum, 1992, Prentice-Hall.
3. Operating Systems Internals and Design Principles by William Stallings, 4<sup>th</sup> edition, 2001, Prentice-Hall

**REFERENCES:**

1. Operating System By Peterson , 1985, AW.
2. Operating System By Milankovic, 1990, TMH.
3. Operating System Incorporating With Unix & Windows By Colin Ritche, 1974, TMH.
4. Operating Systems by Mandrik & Donovan, TMH
5. Operating Systems By Deitel, 1990, AWL.
6. Operating Systems – Advanced Concepts By Mukesh Singhal , N.G. Shivaratri, 2003, T.M.H

**Syllabus for B. Tech. III Year I semester - CSE**  
**THEORY OF COMPUTATION**

a	b	c	d	e	f	g	h	i	j	k	l	m
	x		x									

Code: 3F517

L T P/D C  
3 1 - 3

**UNIT I**

**Fundamentals :** Strings, Alphabet, Language, Operations, Finite state machine, definitions, finite automaton model, acceptance of strings, and languages, deterministic finite automaton and non deterministic finite automaton, transition diagrams and Language recognizers.

**UNIT II**

**Finite Automata:** NFA with transitions - Significance, acceptance of languages. Conversions and Equivalence : Equivalence between NFA with and without  $\epsilon$  transitions, NFA to DFA conversion, minimisation of FSM, equivalence between two FSMs, Finite Automata with output- Moore and Melay machines.

**UNIT III**

**Regular Languages:** Regular sets, regular expressions, identity rules, Constructing finite Automata for a given regular expressions, Conversion of Finite Automata to Regular expressions. Pumping lemma of regular sets, closure properties of regular sets (proofs not required). Regular grammars-right linear and left linear grammars, equivalence between regular linear grammar and FA, inter conversion, Context free grammar, derivation trees, sentential form. Right most and leftmost derivation of strings.

**UNIT IV**

**Context Free Grammars:** Ambiguity in context free grammars. Minimisation of Context Free Grammars. Chomsky normal form, Greiback normal form, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL (proofs omitted). Push down automata, definition, model, acceptance of CFL, Acceptance by final state and acceptance by empty state and its equivalence. Equivalence of CFL and PDA, interconversion. (Proofs not required). Introduction to DCFL and DPDA.

**UNIT V**

**Turing Machine:** Turing Machine, definition, model, design of TM, Computable functions, recursively enumerable languages. Church's hypothesis, counter machine, types of Turing machines (proofs not required).

**UNIT VI**

**Computability Theory:** Chomsky hierarchy of languages, linear bounded automata and context sensitive language, LR(0) grammar, decidability of, problems, Universal Turing Machine, undecidability of posts. Correspondence problem, Turing reducibility, Definition of P and NP problems, NP complete and NP hard problems.

**TEXT BOOKS:**

1. Introduction to Automata Theory Languages and Computation?. Hopcroft H.E. and Ullman J. D. Pearson Education
2. Introduction to Theory of Computation? Sipser 2nd edition Thomson

**REFERENCES:**

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

**Syllabus for B. Tech. III Year I semester**  
**Computer Science and Engineering**  
**COMPUTER NETWORKS**

a	b	c	d	e	f	g	h	i	j	k	l	m
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**Code: 3EC05**

**L T P/D C**  
**3 1 - 3**

**UNIT I**

**Introduction:** Uses of Computer Networks, Types of networks: WAN, LAN, MAN, Network Topologies, Reference models: OSI, TCP/IP.

**Physical Layer:** Transmission media: magnetic media, twisted pair, coaxial cable, fiber optics, wireless transmission.

**UNIT II**

**Data link layer:** Design issues in data link layer: framing, flow control, error control, Error Detection and Correction: Parity, CRC checksum, Hamming code, Flow Control: Sliding Window Protocols, Applications: Data link layer protocols HDLC, PPP.

**UNIT III**

**Medium Access sub layer:** Channel allocation problem, MAC Protocols: ALOHA, CSMA, CSMA/CD, MAC addresses, IEEE 802.X, Standard Ethernet, Wireless LANS. Bridges, Types of Bridges.

**UNIT IV**

**Network Layer:** Design issues in Network Layer, Virtual circuit and Datagram subnets-Routing algorithm: Shortest path routing, Flooding, distance vector routing, Link state routing, Hierarchical routing, Broad casting, Multi casting, Routing for mobile hosts.

Internetworking: Concatenated Virtual Circuits, Connectionless internetworking, Tunneling, Internetwork routing, Fragmentation

**UNIT V**

Network layer in internet: IPv4, IP addresses, Sub netting, Super netting, NAT.

Internet control protocols: ICMP, ARP, RARP, DHCP, Network Layer in ATM Networks.

Congestion Control: Principles of Congestion, Congestion Prevention Policies.

Congestion Control in datagram Subnet: Choke packet, load shedding, jitter control.

Quality of Service: Leaky Bucket algorithm and token bucket algorithm.

**UNIT VI**

**Transport Layer:** Transport Services, Connection establishment, Connection release and TCP and UDP protocols.

**Application Layer:** Domain name system, FTP, HTTP, SMTP, WWW.

**Network Security:** Confidentiality, Authentication, Encryption algorithms.

Case study of encryption algorithm: DES, RSA.

**TEXT BOOKS**

1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI
2. Data Communications and Networking – Behrouz A. Forouzan. Third Edition TMH.

**REFERENCES**

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

**Syllabus for B. Tech. III Year I semester**  
**Computer Science and Engineering**  
**SOFTWARE ENGINEERING**  
**(Common to CSE, IT)**

a	b	c	d	e	f	g	h	i	j	k	l	m
x	x	x	x					x				

**Code: 3EC04**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**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**

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. Design Engineering: Design process and Design quality, Design concepts, the design model. Creating an architectural design: Software architecture, Data design, Architectural styles and patterns, Architectural Design.

**UNIT IV**

Object-Oriented Design: Objects and object classes, An Object-Oriented design process, Design evolution. 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.

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

**UNIT VI**

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. McGrawHill 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.
4. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies.

**Syllabus for B. Tech. III Year I semester  
Computer Science and Engineering  
OBJECT ORIENTED ANALYSIS AND DESIGN**

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
	<b>x</b>		<b>x</b>					<b>x</b>	<b>x</b>			

**Code: 3EC06**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**UNIT I**

**Introduction to UML:** Importance of modelling, principles of modelling, object oriented modelling, conceptual model of the UML, Architecture, Software Development Life Cycle.

**UNIT II**

**Basic Structural Modelling:** Classes, Relationships, common Mechanisms, and diagrams.

**Advanced Structural Modelling:** Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

**UNIT III**

**Class Diagrams:** Terms, concepts, modelling techniques for Class Diagrams.

**Object Diagrams:** Terms, concepts, modelling techniques for Object Diagrams.

Applications: Drawing class and object diagrams for ATM system.

**UNIT IV**

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

Applications: Drawing interaction, use case and activity diagrams for ATM system.

**UNIT V**

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

Applications: Drawing state chart diagram for ATM system.

**UNIT VI**

**Architectural Modelling:** Component, Deployment, Component diagrams and Deployment diagrams.

Application: Drawing design diagrams on Unified Library Management system.

**TEXT BOOKS**

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

**REFERENCES**

1. Fundamentals of Object Oriented Design in UML by Meilir Page-Jones, Pearson Education.
2. Modeling Software Systems Using UML2 by Pascal Roques, WILEY-Dreamtech India Pvt. Ltd.
3. Object Oriented Analysis & Design by Atul Kahate, The McGraw-Hill Companies.
4. Practical Object-Oriented Design with UML by Mark Priestley, TATA McGrawHill
5. Applying UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process by Craig Larman, Pearson Education.

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**Syllabus for B. Tech. III Year I semester**  
**Computer Science and Engineering**  
**QUANTITATIVE APTITUDE**  
 (Common to All Branches)

**Code: 3HC76**

**L T P/D C**  
 - - 2 1

**Unit I**

Number System: Test for Divisibility, Test of prime number, Division and Remainder – HCF and LCM of Numbers - Fractions.

**Unit II**

Average: Average of different groups, Replacement of some of the items - Percentage - Profit and Loss.

**Unit III**

Ratio and Proportion: Properties of Ratio, Comparison of Ratios, Useful Simple Results on Proportion – Partnership and Share.

**Unit IV**

Simple Interest: Effect of change of P, R and T on Simple Interest - Compound Interest: Conversion Period, Difference between Compound Interest and Simple Interest.

**Unit V**

Time and Work- Pipes and Cisterns, Time and Distance- Problems on Trains- Boats and Streams, Allegation or Mixtures.

**Unit VI**

Mensuration: Area of Plane Figures, Volume and Surface Area of Solid Figures.  
 Data Interpretation: Tabulation, Bar Graphs, Pie Charts, Line Graphs.

**Text Books:**

1. Quantitative Aptitude by R.S.Agarwal
2. Quantitative Aptitude by Abhijit Guha

a	b	c	d	e	f	g	h	i	j	k	l	m
x	x	x	x	x	x	x	x	x	x		x	

**Syllabus for B. Tech. III Year I semester  
Computer Science and Engineering  
GROUP PROJECT**

**Code: 3E575**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	3	1

**Pre-Requisites:** All Courses till this semester

**Course Outcomes:**

- Students use the concepts learned in the courses, so far, in conceptualizing, designing and executing the modules of the projects.
- They also exhibit the interest in learning the modern tools and technologies through the bridge courses arranged in the college, beyond the curriculum, and hence developing the software.
- They also inculcate an enthusiasm to use the creative ideas to build the innovative projects which are meeting the current needs of the market and society as a whole.
- Through this course, communicative skills and team skills largely improve.
- The students learn the ability to work as an individual and in a team.

A group project shall be carried out by a group of students consisting of 2 to 3 in number in third year first semester. This work shall be carried out under the guidance of the teacher and shall involve design, fabrication, software development or any other significant activity. This can be of interdisciplinary nature also.

There will be 75 marks in total with 25 marks of internal evaluation.

The **internal evaluation** shall consist of:

Day to day work	:	10 marks
Report	:	05 marks
Demonstration / presentation	:	10 marks
End examination	:	50 Marks.

The end examination will be carried out by a committee consisting of an external examiner, head of the department, a senior faculty member and the supervisor.



**Syllabus for B. Tech. III Year I semester**  
**Computer Science and Engineering**  
**OPERATING SYSTEMS AND COMPUTER NETWORKS LAB**

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>									

**Code:3EC 87**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	4	2

**Objective:**

- To provide an understanding of the language translation peculiarities by designing a complete translator for a mini language.
- To provide an understanding of the design aspects of operating system

**Recommended Systems/Software Requirements:**

1. Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space
2. C++ complier and JDK kit

**PART - A**

1. Simulate the following CPU scheduling algorithms  
a) Round Robin b) SJF c) FCFS d) Priority
2. Simulate all file allocation strategies  
a) Sequential b) Indexed c) Linked
3. Simulate MVT and MFT
4. Simulate all File Organization Techniques  
a) Single level directory b) Two level c) Hierarchical d) DAG
5. Simulate Bankers Algorithm for Dead Lock Avoidance
6. Simulate Bankers Algorithm for Dead Lock Prevention
7. Simulate all page replacement algorithms  
a) FIFO b) LRU c) LFU Etc. ...
8. Simulate Paging Technique of memory management.

**Part B**

1. Implement the data link layer framing methods such as  
a) character / byte stuffing  
b) bit stuffing.
2. Implement on a data set of characters the three CRC polynomials  
a) CRC 12  
b) CRC 16  
c) CRC CCITT.
3. Implement Dijkstra's algorithm to compute the shortest path through a graph.
4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table for each node using distance vector routing algorithm.
5. Write a program to generate sub keys for S-DES Algorithm.
6. Write a program to implement S-DES coding (Encryption and Decryption).
7. Using RSA algorithm, encrypt a text data and Decrypt the same.

**Syllabus for B. Tech. III Year I semester**  
**Computer Science and Engineering**  
**OBJECT ORIENTED ANALYSIS AND DESIGN LAB**

a	b	c	d	e	f	g	h	i	j	k	l	m
x	x	x	x									

**Code: 3E576**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	4	2

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

Case studies:

1. ATM System
2. Online Ticket Reservation
3. Course Registration System
4. E- Book Shop

a	b	c	d	e	f	g	h	i	j	k	l	m
					x	x	x		x			

**Syllabus for B. Tech. III Year I semester  
Computer Science and Engineering  
TECHNICAL PAPER WRITING AND SEMINAR- I**

**Code: 3E590**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	2	1

**Pre-Requisites:** All Courses till this semester

**Course Outcomes:**

- Students identify a topic from the current technical topics of their choice in the computer science domain and the allied fields, after surveying in the internet resources, journals and technical magazines in the library.
- Student learnt to arrange the contents of the presentation and scope of the topic, in an effective manner.
- Each student then presents the technical topic they chose in front of the panel and the fellow students, using the oratory skills.
- Students also face the questions posed by the panel and the students and answer them.

There shall be a Technical Paper writing and seminar evaluated for 25 marks in Third Year First Semester. The evaluation is purely internal and will be conducted as follows:

Paper writing	: 05 marks
Final report	: 05 marks
Presentation before a departmental committee consisting of Head, a Senior Faculty and Supervisor	: 15 marks

a	b	c	d	e	f	g	h	i	j	k	l	m
				x	x	x	x			x	x	x

**Syllabus for B. Tech. III Year II semester**  
**Computer Science and Engineering**  
**BANKING OPERATIONS, INSURANCE AND RISK MANAGEMENT**  
**(OPEN ELECTIVE - II)**

**Code: 3ZC03**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>

**Course Objective:** The objective of the course is to provide to students an understanding of Banking Operations, Insurance Market, and Risk Management Principles and techniques to control the risk, & the major Institutions involved and the Services offered within this framework.

**UNIT I**

**INTRODUCTION TO BANKING BUSINESS:** Introduction to Banking sectors-History of banking business in India, Structure of Indian banking system: Types of accounts, advances and deposits in a bank New Dimensions and products- E-Banking, Mobile-Banking, Net Banking, CRM, cheque system and KYC system.

**UNIT II**

**BANKING REFORMS AND REGULATIONS:** Banking regulation Act-1949, Reserve Bank of India Act-1934, Establishment of RBI, Functions and credit control system; Role of commercial banks and its functions. Banking sector reforms in India and deficiencies in Indian banking including problems accounts and Non-Performing Assets.

**UNIT III**

**INTRODUCTION TO INSURANCE:** Introduction to insurance, Need and importance of Insurance, principles of Insurance, characteristics of insurance contract, branches of insurance and types of insurance; life insurance and its products: Role of Agents and brokers.

**UNIT IV**

**INSURANCE BUSINESS ENVIRONMENT:** Regulatory and legal frame work governing the insurance sector, history of IRDA and its functions: Business and economics of insurance, need for changing mindset and latest trends.

**UNIT V**

**INTRODUCTION TO RISK MANAGEMENT:** Introduction to Risk, meaning and types of risk in business and individual, Risk management process, methods: Risk identification and measurement, Risk management techniques; Non insurance methods.

**UNIT VI**

**FINANCIAL RISK MANAGEMENT:** Introduction to Financial markets. Financial risk management techniques –Derivatives, Hedging and Portfolio management techniques: Derivatives and types of Derivatives-Futures, options and swaps: Shares, Commodity and Currency trading in India.

**BOOKS RECOMMENDED:**

- Varshney, P.N., Banking Law and Practice, Sultan Chand & Sons, New Delhi.
- General Principles of Insurance Harding and Ewantly
- Mark S. Dorfman: Risk Management and Insurance, Pearson, 2009.

**REFERENCES:**

- Scott E. Harringam Gregory R. Nichanus: Risk Management & Insurance, TMH, 2009.
- Geroge E. Rejda: Principles of risk Management & Insurance, 9/e, pearson Education. 2009.
- G. Koteswar: Risk Management Insurance and Derivatives, Himalaya, 2008.
- Gulati: Principles of Insurance Management, Excel, 2009.
- James S Trieschmann, Robert E. Hoyt & David N. Sommer: Risk Mgt. & Insurance, Cengage, 2009.
- Dorfman: Introduction to Risk Management and Insurance, 8/e, Pearson, 2009.
- P.K. Gupta: Insurance and Risk Management, Himalaya, 2009.
- Vivek & P.N. Asthana: Financial Risk Management, Himalaya, 2009.
- Jyotsna Sethi & Nishwan Bhatia: Elements of Banking and Insurance, 2/e, PHI, 2012.

a	b	c	d	e	f	g	h	i	j	k	l	m
x	x	x							x			x

**Syllabus for B. Tech. III Year II semester  
Computer Science and Engineering  
FUNDAMENTALS OF BIOINFORMATICS  
(OPEN ELECTIVE II)**

**Code: 3G642**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
3	-	-	3

**UNIT I****SCOPE OF BIOINFORMATICS and BIOLOGICAL DATABASES:**

History, definition, importance and applications of bioinformatics, Introduction to biological data, Organization and management of databases, Nucleotide databases (Genbank), Protein Databases (SWISS PROT)

**UNIT II****SEQUENCE ALIGNMENT:**

Basic concepts of sequence homology Dynamic Programming, Dot Matrix analysis, Smith-Waterman Algorithm, Needleman-Wunsch Algorithm, Scoring matrices: PAM and BLOSUM matrices

**UNIT III****SEQUENCE-BASED DATABASE SEARCHES:**

BLAST and FASTA algorithms, various versions of basic BLAST and FASTA, Use of these methods for sequence analysis including the on-line use of the tools and interpretation of results.

**UNIT IV****MULTIPLE SEQUENCE ALIGNMENT:**

Basic concepts of various approaches for MSA (e.g. progressive, hierarchical etc.). Algorithm of CLUSTALW and its application

**UNIT V****PHYLOGENETIC ANALYSIS:**

Definition and description of phylogenetic trees. Distance based and character based methods of phylogenetic analysis .

**UNIT VI****PROTEIN STRUCTURE PREDICTION:**

Secondary structure prediction methods, Algorithms of Chou Fasman, GOR methods. Protein homology modeling.

**TEXT BOOKS:**

1. Bioinformatics. David Mount, 2000. CSH Publications

**REFERENCES:**

1. Bioinformatics: A Machine Learning Approach P. Baldi. S. Brunak, MIT Press 1988.
2. Genomics and Proteomics-Functional and Computational aspects. Springer Publications. Editor-Sandor Suhai.
3. Bioinformatics- Methods and Protocols-Human Press. Stephen Misener, Stephen A. Krawetz.
4. Bioinformatics – A Practical guide to the Analysis of Genes and Proteins – Andreas D.Baxevanis, B.F. Francis Ouellette.

a	b	c	d	e	f	g	h	i	j	k	l	m
	x				x							

**Syllabus for B. Tech. III Year II semester  
Computer Science and Engineering  
ROBOTICS  
(PROFESSIONAL ELECTIVE-II)**

**Code: 3BC28**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>

**UNIT I**

**Introduction:** An over view and applications of Robotics, classification by coordinate system and control system. Different types of robot actuators: pneumatic, hydraulic and electric

**UNIT II**

**Motion Analysis and Manipulator Kinematics:** Specifications of matrices, Homogeneous transformations as applicable to rotation and translation, D-H notation, Differential transformations, Jacobians, Forward and inverse kinematics – problems.

**UNIT III**

**Statics and Dynamics of manipulators:** Force and moment balance, Use of Jacobian, Velocity analysis, Lagrange – Euler and Newton – Euler formations for dynamics of manipulators – Problems.

**UNIT IV**

**Trajectory Planning:** Path planning, Skew motion, joint integrated motion – straight line motion.

**UNIT V**

**Control of Manipulators:** Introduction to control systems: open and closed loop control, transfer functions, characteristics of linear and nonlinear systems and their control schemes; model of a manipulator joint, actuator; control schemes applied in robotics: PID

**UNIT VI**

**Robot Sensors and Vision:** Classification of sensors, sensors in robotics; introduction to machine vision, image representation and processing.

**TEXT BOOKS:**

1. Robotics and Control / Mittal R K & Nagrath I J / TMH.
2. Robotics / Fu K S/ McGraw Hill.

**REFERENCES:**

1. Robot Dynamics & Control – Mark W. Spong and M. Vidyasagar / John Wiley & Sons
2. Robotic Engineering / Richard D. Klafter, Prentice Hall

a	b	c	d	e	f	g	h	i	j	k	l	m
				x	x				x	x		

**Syllabus for B. Tech. III Year II semester**  
**Computer Science and Engineering**  
**GENERAL MANAGEMENT & ENTREPRENEURSHIP**  
**(OPEN ELECTIVE - II)**

**Code: 3ZC05**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>

**Course Objective:** The course is designed to impart the necessary managerial skills and tactics required for an emerging Entrepreneur for the Engineering students to enhance their career prospects and ambitions of starting a new Enterprise.

**Pre-requisites:** This course shall require a student to have knowledge in Managerial Economics and Financial analysis, Management Science, Operations management.

**UNIT I**

**INTRODUCTION TO MANAGEMENT AND ENTREPRENEURSHIP:** Changing Face of Management-Entrepreneurship, Modern Management with Entrepreneurial Orientation.. Meaning of Entrepreneurship. Benefits and Drawbacks of Entrepreneurship Reasons feeding the Entrepreneurial fire. Understanding Entrepreneurship as a Process. Multiple roles of Entrepreneur: Intrapreneur, Inventor, Coordinator, Manager and Controller. Psychological and behavioral aspects of First-Generation Entrepreneur. Case Studies

**UNIT II**

**PROCESS DEVELOPMENT AND INNOVATION PROJECT MANAGEMENT:** Business Process Model, Value chain for Manufacturing industries and Service Industries. Frugal Innovation. Creativity process in developing Innovation.. Types of New Products, Forecasting of New Products, Stages in the New Product Development, Prototype building and pitching Going ahead with ideas, killing the ideas through Stage Gate Models, pitching of full fledged idea. Choosing the Start-Up Team.

**UNIT III**

**PROJECT MANAGEMENT & FEASIBILITY REPORT:** Project Inception, Project Implementation, and Project control. Analyzing the project by employing capital budgeting techniques, Risk Management, tools and techniques. Methods of Appraising the Project. Industry Analysis pertaining to the Product, Competitive Analysis and Market analysis. Preparation of feasibility report, Contents of Feasibility Report. Exercise to write an effective Feasibility report. Case Studies.

**UNIT IV**

**PROTECTION OF IDEAS AND MECHANISM:** Exposure to intellectual property rights to the entrepreneur in the Indian and the World context. Registration process for Patents, Copyrights, Trademarks, Geographical indicators. Legal Framework in administration of Intellectual property rights. Meaning of Infringement, consequences of Infringement. Cases on Infringement. Case Studies.

**UNIT V**

**VENTURE FINANCING AND ISSUES RELATED TO PRICING:** Meaning of Venture Capitalist, Process of Venture Capital, Seed Funding, First Phase Funding, Second Phase Funding and Final Phase funding. Cost analysis, Preparation of standard costing, Finalizing the output, fixing the pricing based on market structure, Monopoly, oligopoly market structures and marketing pricing practices for attracting customers. Case Studies



**UNIT VI**

**MANUFACTURING AND QUALITY MANAGEMENT:** Plant Layout, Process and Product Layout, Service Factory. Introduction to Quality Circles, Quality inspection, ISO Certification, process of certification and exposure to the entrepreneurs of the need for certification. Quality certification for Manufacturing industrial. Case Studies

**BOOKS RECOMMENDED:**

- "Projects: Planning, Analysis, Selection, Financing, Implementation, and Review", Prasanna Chandra, TMH, New Delhi, 2012
- "Project Management", Jeffrey K. Pinto, Pearson, 2011
- Small Scale industries and Entrepreneurship Vasanth Desai "Himalya publishing 2012

**REFERENCES:**

- Innovation by Design", Gerald H. (Gus) Gaynor, AMACOM {American Management Association), NYC, 2002
- Entrepreneurship Rajeev Roy "" oxford ,2012
- Fundamentals of Entrepreneurship Nandan H, PHI, 2013
- Entrepreneurship Development Khanka, ,S.Chand 2012
- Robert Hisrich et al ""enterpeneruship TMH 2012
- Entrepreneurship Development B.Janikairam and M Rizwana

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**Syllabus for B. Tech. III Year II semester**  
**Computer Science and Engineering**  
**FUNDAMENTALS OF DISASTER MANAGEMENT**  
**(OPEN ELECTIVE - II)**

**Code: 3ZC07**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>

**Course Objectives:**

1. To provide students an exposure to disasters, their significance and types.
2. To ensure that students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction
3. To gain a preliminary understanding of approaches of Disaster Risk Reduction (DRR)
4. To enhance awareness of institutional processes in the country
5. To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity

**UNIT I**

**INTRODUCTION TO DISASTERS:** Concepts and definitions (Disaster, Hazard, Vulnerability, Resilience, Risks) Disasters – Classification, Causes, Impacts (including social, economic, political, environmental, health, psychosocial, etc.). Differential impacts – in terms of caste, class, gender, age, location, disability.

**UNIT II**

**GLOBAL TRENDS IN DISASTERS:**

Urban disasters, pandemics, complex emergencies, Climate change Case Study on Climate Change.

**UNIT III**

**APPROACHES TO DISASTER RISK REDUCTION:** Disaster cycle – its Analysis, Phases. Culture of safety, prevention, mitigation and preparedness; Community-based DRR: Structural and nonstructural measures, roles and responsibilities of community, Panchayati Raj Institutions / Urban Local Bodies (PRIs / ULBs), district administration, states, centre, and other stakeholders; Case studies.

**UNIT IV**

**INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT:** Factors affecting Vulnerabilities, differential impacts; Impact of Development projects such as dams, embankments, changes in land-use etc; Climate change adaptation; Relevance of indigenous knowledge, appropriate technology and local resources; Case studies.

**UNIT V**

**DISASTER MANAGEMENT IN INDIA:** Hazard and vulnerability profile of India. Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management; Institutional arrangements (Mitigation, Response and Preparedness, DM Act and Policy, Other related policies, plans, programs and legislation); Case studies.

**UNIT VI**

**APPLICATION OF TECHNOLOGY IN DISASTER MANAGEMENT:** IT in Disaster Management – Databases – RDBMS – Management information systems – Decision support systems – GIS – Intranets and Extranets – Video Conferencing, Trigger Mechanism – Remote Sensing – Contribution of remote sensing and GIS. Case Studies and Global Initiatives.

**BOOKS RECOMMENDED:**

- B. K. Khanna: **“Disasters: All you wanted to know about”**, New India Publishing Agency, New Delhi
- Pradeep sanhi, Madhavi malalgoda and arya bandhu, “Disaster risk reduction in south asia “PHI
- Amita sinval ,”Understanding earthquake disasters”TMH,2010

**REFERENCES:**

- Natural Hazards and Disaster Management: R.B. Singh, Rawat Publications
- Remote Sensing and GIS by A.M. Chandra and S.K. Ghosh, Narosa Publishing house
- GIS – Fundamentals, Applications and Implementations: Dr. K. Elangovan, New India publishing agency

**SUGGESTED READING LIST:**

- Alexander David, Introduction in ‘Confronting Catastrophe’, Oxford University Press
- Andharia J., Vulnerability in Disaster Discourse, JTCDM, Tata Institute of Social Sciences Working Paper no. 8, 2008
- Blaikie, P, Cannon T, Davis I, Wisner B 1997. At Risk Natural Hazards, Peoples’ Vulnerability and Disasters, Routledge.
- Coppola P Damon, 2007. Introduction to International Disaster Management
- Carter, Nick 1991. Disaster Management: A Disaster Manager’s Handbook. Asian Development Bank, Manila Philippines.
- Cuny, F. 1983. Development and Disasters, Oxford University Press. Document on World Summit on Sustainable Development 2002.
- Govt. of India: Disaster Management Act 2005, Government of India, New Delhi.
- Government of India, 2009. National Disaster Management Policy
- Gupta Anil K, Sreeja S. Nair. 2011 Environmental Knowledge for Disaster Risk Management, N 1DM, New Delhi
- Indian Journal of Social Work 2002. Special Issue on Psychosocial Aspects of Disasters, Volume 63, Issue 2, April.
- Kapur, Mu & others, 2005: Disasters in India Studies of grim reality, Rawat Publishers
- Kapur Anu 2010: Vulnerable India: A Geographical Study of Disasters, IIAS and Sage Publishers, New Delhi.
- Pelling Mark, 2003 The Vulnerability of Cities: Natural Disaster and Social Resilience Earthscan publishers, London
- Reducing risk of disasters in our communities, Disaster theory, Tearfund, 2006.
- UNISDR, Natural Disasters and Sustainable Development: Understanding the links between Development, Environment and Natural Disasters, Background Paper No. 5. 2002.
- IFRC. 2005. World Disaster Report: Focus on Information in Disaster, pp. 182-225.

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**Syllabus for B. Tech. III Year II semester  
Computer Science and Engineering  
PROJECT MANAGEMENT AND FINANCE  
(OPEN ELECTIVE - II)**

**Code: 3ZC12**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>

**Course Objective:** The course has been designed to create an awareness of the need for systematic management of projects. This application-oriented course provides the skills in project planning, financing, implementing and controlling, starting from project identification, till project termination.

**UNIT I**

**PROJECT MANAGEMENT CONCEPTS:** Concept and characteristics of a project, objectives of project management, types of projects, project organizational structure, project life cycle, qualities & functions of a project manager, challenges and problems of project management.

**UNIT II**

**PROJECT FORMULATION:** Generation and Screening of Project Ideas, Project Identification, Project Rating Preliminary, Analysis, Market, Technical, Financial, Economic and Ecological Pre-Feasibility Report, Project Estimates and Techno- Economic Feasibility Report, Detailed Project Report, Different Project Clearance procedure.

**UNIT III**

**PROJECT IMPLEMENTATION AND CONTROL:** Monitor and assess project performance, performance measurement, Methods to monitor, evaluate and control planned cost and schedule performance, quality management tools and techniques at different stages of project.

**UNIT IV**

**PROJECT FINANCING:** Source of capital, Debt-Equity Financing, Formal & Informal Agencies in Financing, Government grants and Subsidies, Seed, Angel & Venture Capital, DCF Techniques: NPV, IRR, PI and Non DCF Methods: BP, ARR for Project evaluation.

**UNIT V**

**PROJECT RISK ASSESSMENT:** Probabilistic cash flow approaches, sources, measures and perspectives of standalone risk analysis, Sensitivity Analysis, Scenario Analysis, Break-Even-Analysis, Simulation managing risk, Project selection Analysis.

**UNIT VI**

**PROJECT CLOSEOUT AND TERMINATION:** Introduction, Types of Project Termination, Natural Termination – The Closeout Process: Finishing the work, Handling over the project, Gaining acceptance for the Project, Harvesting the Benefits, Project Reviewing.

**BOOKS RECOMMENDED:**

- Clifford F Gray, Erik W Larson, “Project Management-The Managerial Process”, Tata McGraw-Hill Publishing Co. Ltd
- Financial Management by I M Pandey, Vikas Publishing House

**REFERENCES:**

- Jack Meredith, Samuel J. Mantel Jr, “Project Management-A Managerial Approach”, John Wiley Sons
- John M Nicholas “Project Management for Business and Technology” Prentice Hall of India Pvt. Ltd.
- James P Lewis “Project Planning, Scheduling and Control Tata McGraw-Hill Publishing Co. Ltd
- Financial Management: M Y Khan & P K Jain, Text, Problem and Cases 6/e Tata McGraw-Hill Publishing Co. Ltd
- Project Management: Engineering, Technology and Implementation, Shtub, Bard and Globerson, PH Inc.
- Project Management Handbook, Lock, Gower.
- Project Management Handbook, Cleland and King, VNR
- Project Management: Systems approach to Planning Scheduling and Controlling, H. Kerzner.
- Project Scheduling and Monitoring in Practice, S. Choudhury, SAP.
- Total Project Management: The Indian Context, P. K. Joy, Macmillan India Ltd.

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**Syllabus for B. Tech. III Year II semester**  
**Computer Science and Engineering**  
**WEB TECHNOLOGIES**

Code: 3FC09

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**UNIT I**

The World Wide Web (WWW), Importance of Hypertext and Hypertext Markup Language, HTML4.1 Common tags- List, Tables, images, forms, frames, Cascading Style Sheets

**UNIT II**

Introduction to Java Scripts, Dynamic HTML with Java Script, Objects in Java Script, popup windows in JavaScript(alert, prompt, confirm),function declaration usage in JavaScript, Event Handling.

**UNIT III**

XML: Document type definition, XML Schemas, presenting XML using XSLT, Document Object model, reading the XML document using parsers, DOM parser and SAX parser.

**UNIT IV**

Importance Web Servers and Application servers in a JAVA based enterprise application development. Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat. Introduction to **Servlets**: Lifecycle of a Servlet, The Servlet API, The **javax.servlet** package, Reading request parameters, Reading Initialization parameters, reading the context parameters, The **javax.servlet.http** package, Handling Http Request & Responses, Session Tracking using **URL rewriting**, **Hidden form fields**, **Cookies**, **HttpSession**, Security Issues in web Application.

**UNIT V**

Introduction to JSP: The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing: JSP Application Design with MVC. JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects.

**UNIT VI**

Database Access: Database Programming using JDBC, Metadata manipulations through JDBC, Importance of **PreparedStatement** and **CallableStatement**, Studying **javax.sql** package, Accessing a Database from a JSP Page, performing the CRUD operations using JDBC API , importance of a framework usage in a java based web application development, introduction to Struts framework, struts application flow , sample application development using Struts API, Importance of **form bean**, **action** and **struts-config.xml** in a struts application, ,

**TEXT BOOKS:**

1. Web programming building internet applications by Chris Bates 2nd edition
2. Head First Servlets & JSP by Bryan Basham, Kathy Sierra, Bert Bates, Publisher: O'Reilly Media

**REFERENCE BOOKS:**

1. Programming World Wide Web by Sebesta.
2. Thinking In Java 4th Edition by Bruce Eckel
3. Learning XML by Erik T. Ray
4. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown
5. Internet and World Wide Web – How to program by Dietel and Nieto
6. Database Programming with JDBC & Java by George Reese
7. Jakarta Struts Cookbook by Bill Siggelkow

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**Syllabus for B. Tech. III Year II semester**  
**Computer Science and Engineering**  
**COMPILER DESIGN**

**Code: 3EC08**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**UNIT I**

Overview of compiler – Environment, pass, phase, phases of compiler, regular expression, Lexical Analyzer, LEX tool, Bootstrapping.

**UNIT II**

Top Down Parsing: Context free grammar, Top down parsing technique, LMD, RMD, Recursive decent parsing with back tracking, Ambiguous grammar, Elimination of left recursion, Left factoring, unambiguous grammar, Predictive parsing, LL(1).

**UNIT III**

Bottom up parsing: shift reduce parser SLR, CLR, LALR, operator precedence parser, LR (O), LR(1), LR(K) grammar, YACC tool.

**UNIT IV**

Semantic Analysis: Syntax directed translation, S- Attributed, L Attributed definition, Type checker, equivalence of type expressions, type conversions, overloading of functions & operators.

Intermediate code generation: 3-address code form, DAG , polish notation.

**UNIT V**

Runtime environment: Symbol table format, organization of block structure languages, hashing, tree structures representation of scope information Block structures and non-block structures storage allocation, static, runtime stack and heap storage allocations, storage allocation for arrays, strings and records.

Code optimization: Optimization, scope of optimization, common sub expression elimination, frequency reduction, strength reduction, loop optimization, peep-hole optimization, copy propagation.

**UNIT VI**

Data flow Analysis: Data flow graphs, data flow graph Analysis, live variable analysis.

Code generation: Machine dependent code generation, object code forms, register allocation, generic code generation algorithm, DAG for register allocation.

**Case studies:** JIT compiler.

**Text Book:**

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

**Reference Books:**

1. Modern Compiler Construction in C , Andrew W.Appel Cambridge University Press.  
 2. Compiler Construction, LOUDEN, Thomson.

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**Syllabus for B. Tech. III Year II semester**  
**Computer Science and Engineering**  
**COMPUTER GRAPHICS**

**Code: 3FC06**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**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.

**UNIT II**

Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms 2-D geometrical transforms : Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.

**UNIT III**

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 IV**

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

**UNIT V**

3-D viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping Visible surface detection methods: Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods

**UNIT VI**

Computer animation: Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications. ( p.nos 604- 16 of text book -1, chapter 21 of text book-2).

**TEXT BOOKS:**

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

**REFERENCES:**

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



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**Syllabus for B. Tech. III Year II semester**  
**Computer Science and Engineering**  
**INFORMATION SECURITY**

**Code: 3FC11**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
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**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.

**UNIT II**

Conventional Encryption Principles, Conventional encryption algorithms: DES, TDES, AES, cipher block modes of operation, location of encryption devices, key distribution, Approaches of Message Authentication, Secure Hash Functions: SHA1 and HMAC.

**UNIT III**

Public key cryptography principles, public key cryptography algorithms: RSA, DIFFIE HELL MAN, digital signatures, digital Certificates, Certificate Authority and key management  
 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.

**UNIT V**

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

**UNIT VI**

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 Permech, wiley Dreamtech

**REFERENCES:**

1. Fundamentals of Network Security by Eric Maiwald (Dreamtech press)
2. Network Security - Private Communication in a Public World by Charlie Kaufman, Radia Perlman and Mike Speciner, Pearson/PHI.
3. Cryptography and network Security, Third edition, Stallings, PHI/Pearson
4. Principles of Information Security, Whitman, Thomson.
5. Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH
6. Introduction to Cryptography, Buchmann, Springer.

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**Syllabus for B. Tech. III Year II semester**  
**Computer Science and Engineering**  
**COMPUTER FORENSIC**  
**(Professional Elective- I)**

**Code: 3FC18**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**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.

**UNIT II**

**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.

**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.

**UNIT III**

**Duplication and preservation of Digital Evidence:** Preserving the digital Crime Scene – Computer Evidence Processing Steps – Legal Aspects of Collecting and Preserving Computer Forensic Evidence

**Computer Image Verification and authentication:** Special Need of Evidential Authentication – Practical Consideration - Practical Implementation.

**UNIT IV**

**Computer Forensic analysis and validation:** Determining what data to collect and analyze, validating forensic data. Addressing data –hiding techniques, performing remote acquisitions

**Network Forensic:** Network forensics overview, performing live acquisitions, developing standard procedures for network forensics, un sing network tools, examining the honeynet project.

**UNIT V**

**Processing Crime and Incident Scenes:** Identifying digital evidence, collecting evidence in private-sector incident scenes, processing law enforcement crime scene, preparing for a search, securing a computer incident or crime scene, seizing digital evidence, storing at the scene, storing digital evidence, obtain a digital hash, reviewing a case

**Current Computer Forensic tools:** evaluating computer forensic tool needs, computer forensics software tools, computer forensics hardware tools, validating and testing forensic software.

#### **UNIT VI**

**E-Mail Investigations:** Exploring the role of E-mail in investigation, exploring the role of the client and server in e-mail, investigating e-mail crimes and violations, understanding e-mail server, using specialized e-mail forensic tools

**Cell phone and mobile device forensics:** understanding mobile device forensics, understanding acquisition procedures for cell phone and mobile devices

**Working with Windows and DOS Systems:** understanding file systems, exploring Microsoft File Structures, Examining NTFS disks, understating whole disk encryption, windows registry, Microsoft startup tasks, MS-DOS startup tasks, virtual machines.

#### **TEXT BOOKS:**

1. Computer Forensics and Investigations by Phillips, Nelson, Steuart, CENGAGE Learning.
2. Computer Forensics, computer crime Investigations by John –R Vacca Fire wall Media, New Delhi

#### **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.
3. Computer Evidence Collection & Presentation by Christopher L .T.Brown , Firewall Media.
4. Homeland Security, Techniques & Technologies by Jesus Mena, Firewall Media.
5. Software Forensics Collecting Evidence from the scene of a Digital Crime by Robert M. Slade, TMH2005.
6. Windows Forensics by Chad Steel, Wiley India Edition.

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**Syllabus for B. Tech. III Year II semester  
Computer Science and Engineering  
ARTIFICIAL INTELLIGENCE  
(PROFESSIONAL ELECTIVE – I)**

**Code: 3EC11**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**UNIT I**

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

**UNIT II**

**Searching:** Searching for solutions, uniformed search strategies – Breadth first search, depth first Search. Search with partial information (Heuristic search) Greedy best first search, A\* search Game Playing: Adversial search, Games, minimax, algorithm, optimal decisions in multiplayer games, Alpha-Beta pruning, Evaluation functions, cutting of search. **Case studies:** Tic-tac-toe game

**UNIT III**

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.

**UNIT V**

**Planning:** Classical planning problem, Language of planning problems, Expressiveness and extension, planning with state – space search, Forward states space search, Backward states – space search, Heuristics for states space search. Planning with state space search, partial order planning, Graphs. **Case studies:** STRIPS

**UNIT VI**

**Learning:** Forms of learning, Induction learning, Learning Decision Tree, Statistical learning methods, Learning with complex data, learning with hidden variables – EM algorithm, Instance based learning, Neural Networks.  
Case studies: Constructing Neural Network with MATLAB or SCILAB for AND, OR and EX-OR gates

**TEXT BOOKS**

1. Artificial Intelligence – A Modern Approach. Second Edition, Stuart Russel, Peter Norvig, PHI/ Pearson Education.
2. Artificial Intelligence, 3<sup>rd</sup> Edition, Patrick Henry Winston, Pearson Education.

**REFERENCES**

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

**Syllabus for B. Tech. III Year II semester  
Computer Science and Engineering  
SOFTWARE PROJECT MANAGEMENT  
(PROFESSIONAL ELECTIVE – I)**

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**Code: 3EC12**

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<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**UNIT I**

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

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

**UNIT II**

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

**The old way and the new:** The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

**UNIT III**

**Life cycle phases:** Engineering and production stages, inception, Elaboration, construction, transition phases.

**Artifacts of the process:** The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

**UNIT IV**

**Model based software architectures:** A Management perspective and technical perspective.

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

**UNIT V**

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

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

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

**UNIT VI**

**Process Automation:** Automation Building blocks, The Project Environment.

**Project Control and Process instrumentation:** The seven core Metrics, Management indicators, quality indicators, life cycle expectations,

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

**TEXT BOOKS**

a) Software Project Management, Walker Royce: Pearson Education, 2005.

**REFERENCES**

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

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**Syllabus for B. Tech. III Year II semester**  
**Computer Science and Engineering**  
**SOFTWARE ARCHITECTURE AND DESIGN PATTERN**  
**(PROFESSIONAL ELECTIVE – I)**

**Code: 3EC13**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**UNIT I*****Envisioning Architecture***

The Architecture Business Cycle, What is Software Architecture? , Architectural patterns, reference models, reference architectures, architecture structures and views.

**UNIT II*****Creating an Architecture***

Quality Attributes, Architectural styles and patterns, designing the Architecture, Documenting the architecture, Reconstructing Software Architecture.

**UNIT III*****Analyzing Software Architecture***

Architecture evaluation, Architecture design decision making, SAAM, ATAM, CBAM.

***Moving from Architecture to Systems***

Software Product Lines, Building systems from off the shelf components, Software architecture in future.

**UNIT IV*****Design Patterns***

What is pattern? Pattern Description, Organizing catalogs, Role in solving problems, Selection, usage.

**UNIT V**

***Creational patterns:*** Abstract factory, Builder, Factory method, prototype, singleton.

***Structural patterns:*** Adapter, Bridge, Composite, Decorator, Façade, Flyweight, Proxy.

**UNIT VI**

***Behavioural patterns:*** Chain of responsibility, Command, Interpreter, Iterator, Mediator, Memento, Observer, State, Strategy, Template method, Visitor.

***Case Studies***

The World Wide Web - a case study in interoperability, Flight Simulation- A Case Study in an Architecture for Integrability.

**TEXT BOOKS:**

- 1 Software Architecture in Practice, 2<sup>nd</sup> Edition by Len Bass, Paul Clements, Rick Kazman, published by Pearson Edition
2. Design Patterns, by Erich Gamma, Pearson Education

**REFERENCES:**

1. Beyond Software Architecture, Luke Hohmann, Addison Wesley, 2003.
2. Software Architecture, David M Dikel, David Kane and James R Wilson, Prentice Hall PTR, 2001.
3. Pattern Oriented Software Architecture, F Buschmann&others, John Wiley&Sons.
4. Head First Design patterns, Eric Freeman & Elisabeth Freeman, O'REILLY, 2007.
5. Design pattern in java, Steven John Metsker&William C. Wake, Pearson Education, 2006.
6. Design patterns in C#, Steven John Metsker, Pearson Education, 2004.
7. J2EE Patterns, Deepak Alur, John Crupi&Dan Malks, Pearson Education, 2003.
8. Software Design, David Budgen, Second edition, Pearson Education, 2003.

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**Syllabus for B. Tech. III Year II semester**  
**Computer Science and Engineering**  
**LOGICAL REASONING**  
(Common to All Branches)

**Code: 3HC77**

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**Unit – I**

Series Completion: Number Series, Alphabet Series, Alpha – Numeric Series.  
Analogy: Completing the Analogous Pair, Simple Analogy, Choosing the Analogous pair, Double Analogy, Word Analogy, and Number Analogy.

**Unit – II**

Classification / Odd One Out: Word Classification, Number Classification, Letter Classification.  
Coding – Decoding: Letter Coding, Number Coding, Matrix Coding, Substitution, Deciphering Message Word Codes, Jumbled Coding.

**Unit – III**

Blood Relations, Deciphering Jumbled up Descriptions, Relation Puzzle – Direction sense test.  
Number, Ranking & Time Sequence Test – Arithmetical Reasoning – Mathematical Operations.

**Unit – IV**

Directions, Arithmetical Reasoning.  
Puzzle Test: Classification Type Questions, Seating Arrangements Comparison Type Questions, Sequential Order of Things, Selection Based on given conditions, Family – Based Puzzles, Jumbled Problems.

**Unit – V**

Assertions and Reason– Logical Venn Diagrams – Alpha Numeric Sequence Puzzle.  
Cubes and Dice – Analytical Reasoning .Logical Deduction: Logic, Statement – Arguments

**Unit – VI**

Clocks & Calendar .Data Sufficiency and Syllogism.

**Text Book:** Verbal and Non Verbal Reasoning by R. S. Agarwal.

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
<b>x</b>		<b>x</b>				<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>			

**Syllabus for B. Tech. III Year II semester**  
**Computer Science and Engineering**  
**COMPREHENSIVE VIVA II**

**Code: 3E677**

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

**Pre-Requisites:** None

**Course Outcomes:**

- Students are assessed in the courses they have undergone till the completion of that academic year.
- They are asked to comprehend the concepts in the core subjects and the elective subjects, to make them ready to face technical interviews which improve their employability skills.

There shall be a Comprehensive Viva-Voce in III year II Semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of an external examiner, Head of the Department and 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 up to III Year. The Comprehensive Viva-Voce is valued for 50 marks by the Committee.

There are no internal marks for the Comprehensive Viva-Voce.



a	b	c	d	e	f	g	h	i	j	k	l	m
	x	x	x									

**Syllabus for B. Tech. III Year II semester  
Computer Science and Engineering  
COMPILER DESIGN LAB**

**Code:3E678**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	4	2

Consider the following mini Language, a simple procedural high-level language, only operating on integer data, with a syntax looking vaguely like a simple C crossed with Pascal. The syntax of the language is

defined by the following BNF grammar:

```

<program> ::= <block>
<block> ::= { <variabledefinition> <slist> }
| { <slist> }
<variabledefinition> ::= int <vardeflist> ;
<vardeflist> ::= <vardec> | <vardec> , <vardeflist>
<vardec> ::= <identifier> | <identifier> [ <constant> ]
<slist> ::= <statement> | <statement> ; <slist>
<statement> ::= <assignment> | <ifstatement> | <whilestatement>
| <block> | <printstatement> | <empty>
<assignment> ::= <identifier> = <expression>
| <identifier> [ <expression> ] = <expression>
<ifstatement> ::= if <bexpression> then <slist> else <slist> endif
| if <bexpression> then <slist> endif
<whilestatement> ::= while <bexpression> do <slist> enddo
<printstatement> ::= print ( <expression> )
<expression> ::= <expression> <addingop> <term> | <term> | <addingop> <term>
<bexpression> ::= <expression> <relop> <expression>
<relop> ::= < | <= | == | >= | > | !=
<addingop> ::= + | -
<term> ::= <term> <multop> <factor> | <factor>
<multop> ::= * | /
<factor> ::= <constant> | <identifier> | <identifier> [ <expression> ]
| ( <expression> )
<constant> ::= <digit> | <digit> <constant>
<identifier> ::= <identifier> <letterordigit> | <letter>
<letterordigit> ::= <letter> | <digit>
<letter> ::= a|b|c|d|e|f|g|h|i|j|k|l|m|n|o|p|q|r|s|t|u|v|w|x|y|z
<digit> ::= 0|1|2|3|4|5|6|7|8|9
<empty> has the obvious meaning

```

Comments (zero or more characters enclosed between the standard C/Java-style comment brackets /

\*...\*/) can be inserted. The language has rudimentary support for 1-dimensional arrays. The declaration

int a[3] declares an array of three elements, referenced as a[0], a[1] and a[2]. Note also that you should

worry about the scoping of names.

A simple program written in this language is:

```
{ int a[3],t1,t2;
t1=2;
a[0]=1; a[1]=2; a[t1]=3;
t2=-(a[2]+t1*6)/(a[2]-t1);
```

```
if t2>5 then
print(t2);
else {
int t3;
t3=99;
t2=-25;
print(-t1+t2*t3); /* this is a comment
on 2 lines */
} endif }
```

1. Design a Lexical analyzer for the above language. The lexical analyzer should ignore redundant

spaces, tabs and newlines. It should also ignore comments. Although the syntax specification states that identifiers can be arbitrarily long, you may restrict the length to some reasonable value.

2. Implement the lexical analyzer using JLex, flex or lex or other lexical analyzer generating tools.

3. Design Predictive parser for the given language

4. Design LALR bottom up parser for the above language.

5. Convert the BNF rules into Yacc form and write code to generate abstract syntax tree.

6. Write program to generate machine code from the abstract syntax tree generated by the parser. The following instruction set may be considered as target code.

The following is a simple register-based machine, supporting a total of 17 instructions. It has three distinct internal storage areas. The first is the set of 8 registers, used by the individual instructions as detailed below, the second is an area used for the storage of variables and the third is an area used

for the storage of program. The instructions can be preceded by a label. This consists of an integer in the range 1 to 9999 and the label is followed by a colon to separate it from the rest of the instruction. The numerical label can be used as the argument to a jump instruction, as detailed below.

In the description of the individual instructions below, instruction argument types are specified as follows :

**R**

specifies a register in the form R0, R1, R2, R3, R4, R5, R6 or R7 (or r0, r1, etc.).

**L**

specifies a numerical label (in the range 1 to 9999).

**V**

specifies a “variable location” (a variable number, or a variable location pointed to by a register - see below).

**A**

specifies a constant value, a variable location, a register or a variable location pointed to by a register (an indirect address). Constant values are specified as an integer value, optionally preceded by a minus sign, preceded by a # symbol. An indirect address is specified by an @ followed by a register.

So, for example, an A-type argument could have the form 4 (variable number 4), #4 (the constant value 4), r4 (register 4) or @r4 (the contents of register 4 identifies the variable location to be accessed).

The instruction set is defined as follows:

**LOAD A,R**

loads the integer value specified by A into register R.

**STORE R,V**

stores the value in register R to variable V.

**OUT R**

outputs the value in register R.

**NEG R**

negates the value in register R.

**ADD A,R**

adds the value specified by A to register R, leaving the result in register R.

**SUB A,R**

subtracts the value specified by A from register R, leaving the result in register R.

**MUL A,R**

multiplies the value specified by A by register R, leaving the result in register R.

**DIV A,R**

divides register R by the value specified by A, leaving the result in register R.

**JMP L**

causes an unconditional jump to the instruction with the label L.

**JEQ R,L**

jumps to the instruction with the label L if the value in register R is zero.

**JNE R,L**

jumps to the instruction with the label L if the value in register R is not zero.

**JGE R,L**

jumps to the instruction with the label L if the value in register R is greater than or equal to zero.

**JGT R,L**

jumps to the instruction with the label L if the value in register R is greater than zero.

**JLE R,L**

jumps to the instruction with the label L if the value in register R is less than or equal to zero.

**JLT R,L**

jumps to the instruction with the label L if the value in register R is less than zero.

**NOP**

is an instruction with no effect. It can be tagged by a label.

**STOP**

stops execution of the machine. All programs should terminate by executing a STOP instruction.

a	b	c	d	e	f	g	h	i	j	k	l	m
	x	x	x									

**Syllabus for B. Tech. III Year II semester  
Computer Science and Engineering  
WEB TECHNOLOGIES LAB**

**Code: 3FC82**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	4	2

To create a fully functional website with mv 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 firebox
3. Tomcat web server and Apache web server
4. XML editor like Altova Xml-spy [www.Altova.com/XMLSpy – free ], Stylusstudio , etc.,
5. A database either Mysql or Oracle
6. JVM(Java virtual machine) must be installed on your system

**Week-1:**

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

**1) HOME PAGE:**

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

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

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

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

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

Fig 1.1

**2) LOGIN PAGE:**

This page looks like below:





Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	<p style="text-align: center;">Login : <input type="text"/></p> <p style="text-align: center;">Password: <input type="password"/></p> <p style="text-align: center;"> <input type="button" value="Submit"/> <input type="button" value="Reset"/> </p>			

**3) CATALOGUE PAGE:**

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

The details should contain the following:

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

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE		Book : XML Bible Author : Winston Publication : Wiley	\$ 40.5	<input type="button" value="Add to cart"/>
ECE		Book : AI Author : S.Russel Publication : Princeton hall	\$ 63	<input type="button" value="Add to cart"/>
EEE		Book : Java 2 Author : Watson Publication : BPB publications	\$ 35.5	<input type="button" value="Add to cart"/>
CIVIL		Book : HTML in 24 hours Author : Sam Peter Publication : Sam publication	\$ 50	<input type="button" value="Add to cart"/>

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

**Week-2:**

**4) CART PAGE:**

The cart page should look like this:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE	<b>Book name</b>	<b>Price</b>	<b>Quantity</b>	<b>Amount</b>
ECE	Java 2	\$35.5	2	\$70
EEE	XML bible	\$40.5	1	\$40.5
CIVIL			<b>Total amount -</b>	<b>\$130.5</b>

**5) REGISTRATION PAGE:**

Create a “registration form “with the following fields

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

**WEEK 3:****VALIDATION:**

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

3. Name (Name should contains alphabets and the length should not be less than 6 characters).
  4. Password (Password should not be less than 6 characters length).
  5. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com )
  4. Phone number (Phone number should contain 10 digits only).
- Note :** You can also validate the login page with these parameters.

**Week-4:**

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

- 1) Use different font, styles:

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

**For example**

```
<HTML>
<HEAD>
<style type = “text/css”>
  B.headline {color:red; font-size:22px;font-family:arial;text-decoration:underline}
</style>
<HEAD>
<BODY>
  <b>This is normal boild</b><br>
  Selector{cursor:value}
```

```

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

</HEAD>

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

For example:

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

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

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

</HTML>

```

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

```

BODY {background-image:url(myimage.gif);}

```

3) Control the repetition of the image with the background-repeat property.

As background-repeat: repeat

Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.

4) Define styles for links as

A:link

A:visited

A:active

A:hover

**Example:**

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

**5) Work with layers:**

For example:

**LAYER 1 ON TOP:**

```
<div style="position:relative; font-size:50px; z-index:2;">LAYER 1</div>
```

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

```
<div style="position:relative; font-size:50px; z-index:3;">LAYER 1</div>
```

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

**6) Add a customized cursor:**

Selector {cursor:value}

**For example:**

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

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

### Week-5:

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

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

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

Display the XML file as follows.

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

Use XML schemas XSL and CSS for the above purpose.

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

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



**Week-6:**

- 1) Install TOMCAT web server and APACHE.  
While installation assign port number 4040 to TOMCAT and 8080 to APACHE. Make sure that these ports are available i.e., no other process is using this port.
- 2) Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root.  
Access the pages by using the urls: <http://localhost:4040/rama/books.html> (for tomcat)  
<http://localhost:8080/books.html> (for Apache)

**Week-7:**

**User Authentication:**

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

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

If he is a valid user (i.e., user-name and password match) you should welcome him by name (user-name) else you should display “ You are not an authenticated user “.

Use init-parameters to do this. Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters () method.

**Week-8:**

Install a database (Mysql or Oracle).

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

Practice 'JDBC' connectivity.

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

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

**Week-9:**

Write a JSP which does the following job:

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

**Week-10:**

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

**Week-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 ()).

Modify your catalogue and cart JSP pages to achieve the above mentioned functionality using sessions.

**Week-12:**

Developing and deployment of web based application using Struts 1.X

a	b	c	d	e	f	g	h	i	j	k	l	m
					x	x	x		x			

**Syllabus for B. Tech. III Year II semester  
Computer Science and Engineering  
TECHNICAL PAPER WRITING AND SEMINAR- II**

**Code: 3E691**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	2	1

**Pre-Requisites:** All Courses till this semester

**Course Outcomes:**

- Students identify a topic from the current technical topics of their choice in the computer science domain and the allied fields, after surveying in the internet resources, journals and technical magazines in the library.
- Student learnt to arrange the contents of the presentation and scope of the topic, in an effective manner.
- Each student then presents the technical topic they chose in front of the panel and the fellow students, using the oratory skills.
- Students also face the questions posed by the panel and the students and answer them.

There shall be a Technical Paper writing and seminar evaluated for 25 marks in Third Year Second Semester. The evaluation is purely internal and will be conducted as follows:

Paper writing	: 05 marks
Final report	: 05 marks
Presentation before a departmental committee consisting of Head, a Senior Faculty and Supervisor	: 15 marks

**Syllabus for B. Tech. IV Year I semester  
Computer Science and Engineering  
DATA WAREHOUSING AND DATA MINING**

a	b	c	d	e	f	g	h	i	j	k	l	m
	x	x	x					x	x			

**Code: 3FC05**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**UNIT I**

**Introduction:** Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Major issues in Data Mining

**Data Preprocessing:** Needs Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation. Data Mining Primitives, Data Mining Query Languages, Architectures of Data Mining Systems

**UNIT II**

Data Warehouse and OLAP Technology for Data Mining Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation

**Data Cube Computation:** Efficient Methods for simple Data Cube Computation (Full Cube, Iceberg Cube, Closed Cube and Shell Cube), Discovery Driven exploration of data cubes

**UNIT III**

**Concepts Description: Characterization and Comparison:** Data Generalization and Summarization-Based Characterization, Analytical Characterization: Analysis of Attribute Relevance, Mining Class Comparisons: Discriminating between Different Classes, Mining Descriptive Statistical Measures in Large Databases.

**UNIT IV**

**Mining Association Rules in Large Databases :** Association Rule Mining, Mining Single-Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, From Association Mining to Correlation Analysis, Constraint-Based Association Mining.

**UNIT V**

**Classification and Prediction:** Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods, Prediction, Classifier Accuracy.

**UNIT VI**

**Cluster Analysis Introduction:** Introduction to machine learning, Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis.

**TEXT BOOK:**

1. Data Mining – Concepts and Techniques - JIAWEI HAN & MICHELINE KAMBER Harcourt India.
2. Introduction to Data Mining - First Edition, by Pang-Ning Tan, Michael Steinbach and Vipin Kumar, ISBN-13: 978-0321321367

**REFERENCES:**

1. Data Mining Introductory and advanced topics –MARGARET H DUNHAM, PEARSON EDUCATION
2. Data Mining Techniques – ARUN K PUJARI, University Press.
3. Data Warehousing in the Real World – SAM ANAHORY & DENNIS MURRAY. Pearson Edn Asia.
4. Data Warehousing Fundamentals – PAULRAJ PONNAIAH WILEY STUDENT EDITION.
5. The Data Warehouse Life cycle Tool kit – RALPH KIMBALL WILEY STUDENT EDITION

**Syllabus for B. Tech. IV Year I semester  
Computer Science and Engineering  
SEMANTIC WEB AND SOCIAL NETWORKS  
(PROFESSIONAL ELECTIVE-II)**

a	b	c	d	e	f	g	h	i	j	k	l	m
		x									x	

Code: 3FC19

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**Unit I**

**Web Intelligence:** Thinking and Intelligent Web Applications, The Information Age, The World Wide Web, Limitations of Today's Web, The Next Generation Web

**Unit II**

**Machine Intelligence:** Machine Intelligence, Artificial Intelligence, Ontology, Inference engines, Software Agents, Berners-Lee www, Semantic Road Map, Logic on the semantic Web.

**Unit III**

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

**Unit IV**

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

**Unit V**

**Semantic Web Applications, Services and Technology:** Semantic Web applications and services, Semantic Search, e-learning, Semantic Bioinformatics, Knowledge Base ,XML Based Web Services, Creating an OWL-S Ontology for Web Services, Semantic Search Technology, Web Search Agents and Semantic Methods,

**Unit VI**

**Social Network Analysis and Semantic web:** 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 network features.

**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,JohnWiley&Sons.
2. Semantic Web and Semantic Web Services -Liyang Lu Chapman and Hall/CRC Publishers (Taylor & Francis Group)
3. Information Sharing on the semantic Web - Heiner Stuckenschmidt; Frank Van Harmelen, Springer Publications.
4. Programming the Semantic Web, T. Segaran, C. Evans, J. Taylor, O'Reilly, SPD.
5. A Semantic Web Primer, G. Antoniou and V. Harmelen, PHI.

**Syllabus for B. Tech. IV Year I semester**  
**Computer Science and Engineering**  
**CLOUD COMPUTING**  
**(PROFESSIONAL ELECTIVE – II)**

a	b	c	d	e	f	g	h	i	j	k	l	m
x	x	x	x				x	x				

**Code: 3E715**

**L**      **T**      **P/D**    **C**  
**3**      **1**      **-**      **3**

**UNIT - I**

Introductory Concepts & overview: Distributed Systems - Parallel Computing Architectures: Vector Processing, Symmetric Multi Processing and Massively parallel processing systems - High Performance Computing - Grid Computing - Service Oriented Architecture Overview - Virtualization. Case Studies: Creation of Virtual machine with Virtual box

**UNIT - II**

Overview of Cloud Computing : Meaning of the terms Cloud and cloud computing - cloud based service offerings - 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.

**UNIT - III**

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 center - SOA as step toward cloud computing - basic approach to a data center based SOA.

**UNIT - IV**

Federation Presence, Identity & Privacy in the Cloud: Federation in the cloud - presence in the cloud - privacy in the cloud - Privacy and its relation to cloud based information system. Security in the cloud: cloud security challenges - software as a service security.

**UNIT - V**

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 - VI**

Mobile internet devices and the cloud: Smartphone - mobile operating systems for Smartphone - mobile platform virtualization - Collaboration Applications for mobile platforms - future trends.

Case Studies: Map Reduce, HDFS.

**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 McGrawHill edition, 2010.

**REFERENCES:**

1. Cloud Application Architectures by George Reese, Oreilly publishers.
2. Cloud Computing and SOA convergence in your enterprise, David S. Linthicum, Addison- Wesley.
3. George Coulouris, JeanDollimore and Tim Kindberg. Distributed Systems:Concepts and Design (Edition 3 ).Addison-Wesley2001 .

**Syllabus for B. Tech. IV Year I semester  
Computer Science and Engineering  
INFORMATION RETRIEVAL SYSTEM  
(PROFESSIONAL ELECTIVE – II)**

a	b	c	d	e	f	g	h	i	j	k	l	m
x	x		x					x				

**Code: 3E714**

**L      T      P/D      C**  
**3      1      -      3**

**UNIT I**

**Introduction:** Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses, **Information Retrieval System Capabilities** - Search, Browse, Miscellaneous.

**UNIT II**

**Cataloguing 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.

**UNIT VI**

**Multimedia Information Retrieval** – Models and Languages – Data Modeling, Query Languages, Indexing and Searching - **Libraries and Bibliographical Systems** – Online IR Systems, OPACs, Digital Libraries.

**TEXT BOOKS**

1. Information Storage and Retrieval Systems: Theory and Implementation By Kowalski, Gerald, Mark T Maybury Kluwer Academic Press, 2000.
2. Modern Information Retrieval By Ricardo Baeza-Yates, Pearson Education, 2007.
3. Information Retrieval: Algorithms and Heuristics By David A Grossman and Ophir Frieder, 2<sup>nd</sup> Edition, Springer International Edition, 2004.

**REFERENCES**

1. Information Retrieval Data Structures and Algorithms by William B Frakes, Ricardo Baeza-Yates, Pearson Education, 1992.
2. Information Storage & Retrieval by Robert Korfhage – John Wiley & Sons.
3. Introduction to Information Retrieval By Christopher D. Manning and Prabhakar Raghavan, Cambridge University Press, 2008.

**Syllabus for B. Tech. IV Year I semester  
Computer Science and Engineering  
Multimedia and Image Processing  
(PROFESSIONAL ELECTIVE – II)**

a	b	c	d	e	f	g	h	i	j	k	l	m
x	x	x										

**Code: 3FC12**

**L            T            P/D    C**  
**3            1            -       3**

**UNIT I**

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

**UNIT II**

**Fundamental concepts in video and digital audio:** Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.

**UNIT III**

**DIP basics:** Examples of fields that use digital image processing, fundamental steps in digital image processing, components of image processing system, a simple image formation model.

**UNIT IV**

**Image enhancement:** Basic gray-level transformation, histogram processing, enhancement using arithmetic and logic operators, basic spatial filtering, smoothing and sharpening spatial filters

**Image restoration:** A model of the image degradation/restoration process, noise models, restoration in the presence of noise—only spatial filtering.

**UNIT V**

**Data Compression:** Fundamentals, image and video compression models, error-free compression, lossy predictive coding, image compression standards

**UNIT VI**

**Segmentation and Recognition:**

Detection of discontinuous, edge linking and boundary detection, thresholding, region-based segmentation, Patterns and patterns classes, recognition based on decision-theoretic methods.

**TEXT BOOKS:**

1. Fundamentals of Multimedia by Ze - Nian Li and Mark S. Drew PHI/Pearson Education.
2. Digital Image Processing, Rafeal C. Gonzalez, Richard E. Woods, 2<sup>nd</sup> Edition, Pearson Education/PHI.

**REFERENCE BOOKS:**

1. Digital Multimedia, Nigel Chapman and Jenny Chapman, Wiley-Dreamtech
2. Multimedia and communications Technology, Steve Heath, Elsevier (Focal Press).
4. Image Processing, Analysis, and Machine Vision, Milan Sonka, Vaclav Hlavac and Roger Boyle, Second Edition, Thomson Learning
5. Digital Image Processing, William K. Pratt, Wiley Third Edition
6. Digital Image Processing, Jahne, Springer.

**Syllabus for B. Tech. IV Year I semester  
Computer Science and Engineering  
SOFTWARE TESTING**

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
<b>x</b>		<b>x</b>										

**Code: 3E709**

**L T P/D C**  
**3 1 - 3**

**UNIT I**

Software testing strategy and Environment, Establishing testing policy, structured approach to testing, Test factors, Economics of SDLC testing.

**UNIT II**

SQA framework, Software Quality Assurance, Components of Software Quality assurance, software Quality Assurance plan, Steps to develop and implement a SQA plan, Quality standards: ISO standards, CMM, CMMI, PCMM, Malcom Balridge, Malcom Balridge

**UNIT III**

Metrics and Measurements introduction, product quality metrics, In-process Quality Metrics, Metrics for Software maintenance, Examples of Metric programs, Software Quality metrics methodology, Establish quality requirements, Identify software quality metrics, Implement the software quality metrics, Analyze software metrics results, Validate the software quality metrics.

**UNIT IV**

Software Testing Methodology, Defects hard to find, Verification and validation, Functional and structural, Workbench concept, Eight Consideration of software testing methodology, testing tactics checklist.

**UNIT V**

Software Testing Techniques, Black-box, Boundary value, Bottomup, Branch coverage, Cause Effect graphing, CRUD, Database, Histogram, Graybox, Inspections, JADs, Pareto Analysis , Prototyping , Random Testing, Risk based testing , Regression Tasting, Structured walkthroughs, Thread testing , Performance testing, White box testing

**UNIT VI**

Graph matrices and application: Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm.  
Exposure to Software Testing Tools: Load Runner, Win runner and QTP.

**TEXT BOOKS**

1. Effective Methods for Software Testing, 2<sup>nd</sup> Edition by William E.Perry, Wiley publications.
2. Software Quality, by Mordechai Ben-Menachem/ Gray S.Marlist By Thomson learning publications
3. Software Testing and continuous Quality Improvement, by William E.Lewis,Gunasekaran,2<sup>nd</sup> Edition Auerbach publications
4. Metrics and Models for Software Quality Engineering by Stephen H.Kan by Pearson Education Publications
5. Software testing techniques – Boris Beizer, Dreamtech, second edition.
6. Software testing tools – by Dr. K.V.K.K Prasad Dreamtech

**REFERENCES**

1. Software Testing Techniques ,by Bories Beizer, Second Edition,Dreamtech Press
2. Testing and Quality Assurance for Component based software ,by Gao,Tsao and Wu,Artech House Publishers
3. Managing the Testing Process,by Rex Black,Wiley.
4. Handbook of Software Quality Assurance, by G.Gordon Schulmeyer,James I.McManus,2<sup>nd</sup> Edition,International Thomson Computer Press



a	b	c	d	e	f	g	h	i	j	k	l	m
				x	x				x			x

**Syllabus for B. Tech. IV Year I semester**  
**Computer Science and Engineering**  
**MANAGEMENT SCIENCE**

**Code: 3ZC02**

**L T P C**  
**3 1 - 3**

**Course Objective:** The course is aimed at giving the basics of management, its principles, practices and latest concepts for increasing the performance of engineering graduates in their respective fields.

**UNIT I**

**INTRODUCTION TO MANAGEMENT:** Management- Definitions, Fayol's principles of Management, Levels of Management, functions of management. Planning: types of planning, planning process; Organizing: Organizational Design and structure, staffing; Directing; Maslow's Motivational theory, Leadership styles, Controlling: Basic control process.

**UNIT II**

**INTRODUCTION TO OPERATIONS MANAGEMENT:** Plant Location, plant layout, types of production, Work Study, Method study and Work Measurement, Basic Procedures Project Management: Network Analysis - Programme Evaluation and Review Techniques, Critical Path Method, Crashing of Simple Networks.

**UNIT III**

**MATERIALS MANAGEMENT:** Objectives of Materials, Need for Inventory Control, Economic Order Quantity, ABC Analysis, Inventory Control Systems, Just In Time, Introduction to LSCM, Quality Control Techniques– Inspection, ISO standards, Six Sigma.

**UNIT IV**

**(i) Human Resources Management:** Objectives of HRM, Challenges of HRM, HR Planning process HR functions and policies – Recruitment, Selection, Training and Development, Performance Appraisal, Balanced Score Card.

**(ii) Marketing Management:** Concept of Marketing, Functions, Marketing Mix, Product Life Cycle, Marketing Strategies, Channels of Distribution, Differences between products and services.

**UNIT V**

**INTRODUCTION TO ORGANIZATIONAL BEHAVIOR:** Definition, Nature and Scope, Perception – Perceptual selectivity and organization, Personality and Attitudes, Determinants of personality Formation of Attitudes-, Perceptual Distortions Attribution analysis Attribution theories, Johari Window and Transactional Analysis.

**UNIT VI**

**STRATEGIC MANAGEMENT:** Concepts in Strategic Management, Vision, Mission, Objectives, SWOT Analysis, Concept of Strategic Planning, Competitive Advantage, Concept of Core Competence; An overview, Process and its Implementation, Target Setting, Types of strategies, strategy formulation; Implementation.

**ESSENTIAL READING:**

- A R Aryasri: Management Science, Tata Mc Graw Hill

**SUGGESTED READINGS:**

- Dr. Y. Satyanarayana: Management control systems in competitive environment,
- Koontz & Weihrich: Essentials of Management, 6/e, TMH, 2005
- Kotler Philip & Keller Kevin Lane: Market Management 12/e, PHI, 2005
- 5 Strategic Management, Text and Cases, VSP Rao, V Hari Krishna
- Thomas N Duening & John M. Ivancevich Management – Principles and Guidelines

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x		x						x				

**Syllabus for B. Tech. IV Year I semester**  
**Computer Science and Engineering**  
**MOBILE COMPUTING**

Code: 3EC16

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>-</b>	<b>4</b>

**UNIT - I**

**Introduction to Mobile Communications and Computing:** Mobile Computing (MC): Introduction to MC, novel applications, limitations, introduction to mobile architecture - UMTS, GSM.

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

**UNIT - II**

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

**UNIT - III**

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

**UNIT - IV**

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

**UNIT - V**

**Mobile Ad hoc Networks (MANETs):** Overview, Properties of a MANET, spectrum of MANET applications, routing algorithms.

**Database:** Hoarding techniques, caching invalidation mechanisms, client server computing with adaptation, data delivery mechanisms

**UNIT - VI**

**Protocols and Tools:** Wireless Application Protocol-WAP. (Introduction, protocol architecture, and treatment of protocols of all layers), Bluetooth (User scenarios, physical layer, MAC layer, networking, security, link management), introduction to mobile operating systems- Android, Java OS (J2ME).

**TEXT BOOKS**

1. Jochen Schiller, "Mobile Communications", *Addison-Wesley*. (Chapters 1, 2, 3, 4, 7, 8 and 9). Second edition, 2004.
2. Stojmenovic and Cacute, "Handbook of Wireless Networks and Mobile Computing", *Wiley*, 2002, ISBN 0471419028. (Chapters 6, 11, 15, 17, 18, 19, 26 and 27)

**REFERENCES**

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

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**Syllabus for B. Tech. IV Year I semester  
Computer Science and Engineering  
ENVIRONMENTAL STUDIES**

**Code: 3GC06**

**L T P/D C  
3 1 - 3**

**UNIT I: ECOSYSTEMS**

Ecosystem definition, concept, Structure and Function, food chain and food web, Ecological pyramids, Biogeochemical cycles, Ecological niche and succession, Classification (Forest, Grassland, Desert, Pond, River, Marine, Estuarine, Wetlands), ecosystem value, services and carrying capacity.

**UNIT II: NATURAL RESOURCES**

Definition, classification, Forest resources-use and over-exploitation, deforestation, Forest Conservation Act, Energy resources-energy demand, renewable and non-renewable energy resources, alternate energy resources, Case studies. Food Resources-World Food problems, effects of modern agriculture, fertilizer-pesticide problems, Mineral resources: Use and exploitation environmental effects of extracting and using mineral resources, case studies.

**UNIT III: ENVIRONMENTAL COMPONENTS**

Atmosphere- Definition, layers, state (weather and climate) acid rain, green house effect, ozone layer depletion, Seasons in India, Global warming, Kyoto protocol, Montreal protocol, Carbon trading, Hydrosphere-Definition, Types (surface and groundwater), distribution, Water conservation, use and over-exploitation, floods, drought, dams-benefits and problems, conflicts over water, Lithosphere-Chemical composition of the earth (core, mantle, crust), mineral resources-environmental effects of mining, Rocks and soils, Plate tectonics

**UNIT IV: BIO DIVERSITY AND ITS CONSERVATION**

Introduction, Definition, Genetic species and Eco system diversity, Value of bio diversity, Hot spots, Threats to bio diversity, Conservation strategies: Insitu and Exsitu conservation, Biological Diversity Act 2002, Wild life Protection Act.

**UNIT V: ENVIRONMENTAL POLLUTION AND CONTROL**

Air pollution: Definition, causes, effects and Control measures, Environment Protection Act, Air (Prevention and Control of Pollution) Act, 1981, Case study: Bhopal Gas Tragedy, London smog, Chernobyl disaster, Water Pollution- Definition, types, characteristics of domestic and industrial effluents – Water quality parameters, Drinking water treatment and standards, Waste water treatment, Case studies: Ganga Water Pollution, Mercury pollution-Minamata Bay diseases, Water (Prevention and Control of Pollution) Act, 1974, Definition, causes, effects and Control measures: Soil Pollution, Noise Pollution and Marine Pollution, Waste Management- Solid Waste, Hazardous waste and E-waste management, Disaster Management-Floods, Earthquakes and Cyclones.

**UNIT VI: SUSTAINABLE DEVELOPMENT**

Concept of Sustainable development, Threats to sustainability-population explosion, urbanization, over-exploitation of resources, Strategies for Sustainable development- Wasteland reclamation, Role of IT (Remote sensing and GIS) in environmental management, green technologies, Environmental Impact Assessment-overview

**TEXT BOOKS:**

1. INTRODUCTION TO ENVIRONMENTAL SCIENCE –by Dr.Y.Anjaneyulu, B.S.Publications 2004.
2. ENVIRONMENTAL STUDIES by Erach bharucha 2005, University grants commission, University press.
3. ENVIRONMENTAL SCIENCES-A NEW APPROACH by Purohit, shammi and Agarwal, Agrobios (India) 2004.
4. ENVIRONMENTAL SCIENCES-A Text book for Undergraduate by Dr. K.Mukkanti, S. Chand & Company Ltd., 2010.

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**Syllabus for B. Tech. IV Year I semester**  
**Computer Science and Engineering**  
**CULTURE, VALUES, PROFESSIONAL ETHICS & IPR**  
**(Common to all branches)**

**Code: 3GC33**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>2</b>	<b>1</b>	<b>-</b>	<b>2</b>

**UNIT-I INDIAN CULTURE:**

A Introduction to Culture Values and Ethics, Bharata, The Indian Concept of Human Life, Indian Civilization, Sanskrit and Indian Languages, Festivals, Sculpture, Music, Dance, Drama, Ayurveda, Family and its Importance, Indian Marriage System, Status of Women in Indian Society, Education, Purpose, Ancient System, Value Education, Interfaith Understanding, Happiness, Modernism and its Effect on Lifestyle, Mind and its Operation, Control of Mind, Yoga, Exemplary Life Sketches-Albert Einstein, Abraham Lincoln

**UNIT-II VALUE SYSTEM:**

Human Value System, Truthfulness, Righteousness, Peace, Non-Violence, Love, Kindness and Compassion, Humility, Faith, Courage, Optimism, Forgiveness, Ceiling on Desires (Control of Sense organs), Exemplary Life Sketches-M K Gandhi, Abdul Kalam

**UNIT-III ETHICS:**

Ethics in Ancient India, Ethics, Morals, Ethics and Human Life, Core Areas for Ethics, Values, Morality, Integrity, Honesty, Character, Loyalty, Trustworthiness, Courage and Confidence, Confidentiality, Secrecy and Transparency, Justification, Contracts and Spirit Promises and Schedules, Quarrels, Selfishness, Obstacles, Supporting Measures, Reputation and its sale, Decision Making in Ethics, Exemplary Life Sketches-Vishveshwaraiah, Jagadeesh Chandra Bose, Meghanad Saha

**UNIT- IV PROFESSIONAL ETHICS:**

Occupation, Profession, Professional, Professional Organization, Obligations Of a Professional, Temptations, Aptitude, Importance of Professional Ethics for Engineers, Code of Ethics, Need for a Code, Impact of Ethical Behaviour, The Code of Ethics for Engineers, Fundamental Principles and Cannons, Commerce and Ethics, Marketing Ethics, Finance and Ethics, Science, Religion and Ethics, Medical Ethics, Genetics and Ethics, Politics and Ethics, Genders and Ethics, Media and Ethics, Computer Ethics  
 Exemplary Life Sketches- Narayan Murthy, Homi Jahangir Bhabha

**UNIT –V INTELLECTUAL PROPERTY RIGHTS (IPR):**

Invention and Creativity, Basic Types of Property, Need for Protection of IPR, IP Types Industrial Property (Patents, Trade Marks, Trade Secrets, Industrial Designs and Integrated Circuits), Copyrights and Related Rights, Geographical Indications.

**UNIT-VI**

WIPO Mission and Activities, GATT & Trips, Indian Position on WTO and strategies, Indian IPR legislations-commitments to WTO-Patent Ordinance and the Bill, Draft of a National Intellectual Property Policy, Case Studies on IP

**REFERENCES:**

1. The ABCs of Ethics by Michael. L. Buckner, Universe. Inc, New York Lincoln, Shanghai
2. Science, Faith and Ethics by Denis Alexander and Robert.S.White, Hendrickson Publishers, Massachusetts, USA, March 2006
3. Vedic Science Primer by PSR Murthy, BS Publications, Hyderabad
4. Medical Ethics-Global View Points, Edited by Diane Andrews, Hennig Feld, Green Haven Press
5. Divine Stories, Human Value Stories, Volume I and II, Sri Satya Sai Books and Publications

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
					<b>x</b>	<b>x</b>						

**Syllabus for B. Tech. IV Year I semester  
Computer Science and Engineering  
PROJECT PHASE – I**

**Code: 3E780**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	2	1

**Pre-Requisites:** All Courses till this semester

**Course Outcomes:**

- Students identify a topic from the current technical topics of their choice in the computer science domain and the allied fields, after surveying in the internet resources, journals and technical magazines in the library.
- Student learnt to arrange the contents of the presentation and scope of the topic, in an effective manner.
- Each student then presents the technical topic they chose in front of the panel and the fellow students, using the oratory skills.
- Students also face the questions posed by the panel and the students and answer them.

A pre-project seminar in fourth year first semester will be evaluated for 50 marks as follows. This is aimed at the students to identify a project on which they are likely to continue for their project in final year second semester.

Preliminary Report on progress of the work	: 10 marks
Mid Semester presentation	: 10 marks
Final report	: 10 marks
Final Presentation and Defense before a departmental Committee consisting of head, a senior faculty and supervisor	: 20 marks

There shall be no external evaluation in pre-project seminar.

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>		<b>x</b>	

**Syllabus for B. Tech. IV Year I semester  
Computer Science and Engineering  
INDUSTRY ORIENTED MINI PROJECT**

**Code: 3E781**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	-	2

**Pre-Requisites:** All Courses till this semester

**Course Outcomes:**

- Students used the concepts learned in the courses, so far, in executing the modules of the projects.
- They also exhibited the interest in learning the modern tools and technologies through the bridge courses arranged in the college, beyond the curriculum, and hence developing the software.
- They also inculcated an enthusiasm to use the creative ideas to build the innovative projects which are meeting the current needs of the market and society as a whole.
- Through this course, communicative skills and team skills are largely improved.
- The students learnt the ability to work as an individual and in a team.

There shall be an industry-oriented mini-Project in their specialization that may be carried out in collaboration with an industry / R & B organization / Academic Institution, to be taken up during the vacation after III year II Semester examination. However, the mini project and its report shall be evaluated during IV year I Semester. The industry oriented mini project shall be evaluated for a total of 150 marks with 50 marks for internal assessment and 100 marks for end examination. The mini project must be submitted in report form and should be presented before a committee, consisting of an external examiner, head of the department, a senior faculty member of the department and supervisor of the mini project.

**The pattern of internal evaluation** is as follows:

Work in progress as evaluated by internal guide	:	10 marks
Work in progress as evaluated by External guide	:	20 marks
Report	:	10 marks
Seminar presentation and defense of project	:	10 marks

If the mini project is conducted within the college, the work in progress is evaluated by the supervisor for 30 marks.

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
		<b>x</b>	<b>x</b>		<b>x</b>							

**Syllabus for B. Tech. IV Year I semester  
Computer Science and Engineering  
SOFTWARE TESTING LAB**

**Code: 3E779**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	4	2

**Pre-Requisites:** Software Quality Assurance and Testing**Course Outcomes:**

- Students demonstrate skills to use modern software testing tools (EX: QTP, Bugzilla, Selenium, Test Director and Quality Center).
  - Students test application (web, Window application) by using the tools.
  - Students demonstrate the ability to differentiate between different Testing tools present in the market (like functional testing tools, Test Management Tools, Bug Tracking Tools and Performance Testing Tools).
  - Students prepare Test Plan document and write Test Cases for Small scale Project (Like for their B.Tech IV Year Project or Post-Graduate Projects).
  - Students learn how to Analyze SRS document in order to prepare Test Plan Document.
1. 1. Write programs in ‘C’ Language to demonstrate the working of the following constructs:  
i) do...while    ii) while...do    iii) if ...else    iv) switch    v) for
  2. 2. A program written in ‘C’ language for matrix multiplication fails” Introspect the causes for its failure and write down the possible reasons for its failure.
  3. 3. Take any system (e.g. ATM system) and study its system specifications and report the various bugs.
  4. 4. write the test cases for any known application (e.g. banking application)
  5. 5. Create a test plan document for any application (e.g. library management system)
  6. 6. Study of testing tool (e.g. win runner)
  7. 7. Study of testing tool (QTP)
  8. 8. Study of any bug tracking tool (e. g. Bugzilla, Bugbit)
  9. 9. Study of Load runner.
  10. 10. study on open STA (open source testing tool)

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
	<b>x</b>	<b>x</b>	<b>x</b>					<b>x</b>	<b>x</b>			

**Syllabus for B. Tech. IV Year I semester**  
**Computer Science and Engineering**  
**DATA WAREHOUSING AND DATA MINING LAB**

**Code: 3FC77**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	4	2

1. Build a Data Warehouse to perform filter transformation for the employee database.
2. Add the commission of 1000 Rs in the Salary field of Employee table using Expression Transformation.
3. Using Aggregator transformation display the average salary of employees in each departments.
4. Using Joiner transformation display the Sailor\_Name form Sailors table and Boat\_Name from Boats table in a new table.
5. Compare the GRI and Apriori usage (Prepare a sample data set in Spread Sheet)
6. Determine the Drugs importance w.r.t. Age, Cholestrol and BP using C 5.0
7. Predict the accuracy of the test data set using Neural Net model using a Case Study of Botanical data set.
8. Using Kohonen model of classification determine the Classifier and the Test data and predict the test data set using classified data set.
9. Compare the C 5.0 and Neural Net using the sample data.



a	b	c	d	e	f	g	h	i	j	k	l	m
					x	x	x		x			

**Syllabus for B. Tech. IV Year I semester  
Computer Science and Engineering  
TECHNICAL PAPER WRITING AND SEMINAR- III**

**Code: 3E792**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	2	1

**Pre-Requisites:** All Courses till this semester

**Course Outcomes:**

- Students identify a topic from the current technical topics of their choice in the computer science domain and the allied fields, after surveying in the internet resources, journals and technical magazines in the library.
- Student learnt to arrange the contents of the presentation and scope of the topic, in an effective manner.
- Each student then presents the technical topic they chose in front of the panel and the fellow students, using the oratory skills.
- Students also face the questions posed by the panel and the students and answer them.

There shall be a Technical Paper writing and seminar evaluated for 25 marks in Fourth Year First Semester. The evaluation is purely internal and will be conducted as follows:

Paper writing	: 05 marks
Final report	: 05 marks
Presentation before a departmental committee consisting of Head, a Senior Faculty and Supervisor	: 15 marks

**Syllabus for B. Tech. IV Year II semester  
Computer Science and Engineering  
HUMAN COMPUTER INTERACTION  
(PROFESSIONAL ELECTIVE –III)**

a	b	c	d	e	f	g	h	i	j	k	l	m
	x	x										
							L	T		P/D		C
							4	-		-		4

**Code: 3E817**

**UNIT I**

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

**UNIT II**

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

**UNIT III**

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

**UNIT IV**

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

**UNIT V**

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

Components – text and messages, Icons and increases – Multimedia, colours, uses problems, choosing colors.

Case studies: windows GUI.

**UNIT VI**

Software tools – Specification methods, interface – Building Tools.

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

**TEXT BOOKS:**

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

**REFERENCES:**

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

**Syllabus for B. Tech. IV Year II semester  
Computer Science and Engineering  
EMBEDDED & REAL TIME SYSTEMS  
(Common to ECM, CSE, ECE & EEE)  
(PROFESSIONAL ELECTIVE –III)**

a	b	c	d	e	f	g	h	i	j	k	l	m
	x				x							
							<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>		
							<b>4</b>	<b>-</b>	<b>-</b>	<b>4</b>		

**Code: 3DC06**

**UNIT I**

**Introduction to Embedded Systems:** Introduction, Complex Systems and Microprocessor, Embedded System Design Process, Formalisms for System Design (Ch 1 of Wolf) Design challenge, processor technology, IC technology, Design Technology, Trade-offs. (Ch 1 Frank)

**UNIT II**

**8051 Programming and Interfacing:** 8051 Architecture, features, LCD Interfacing, Stepper Motor Interfacing, DC motor Interfacing Using PWM. (Ch 1, 10, 11 Mazidi)

**UNIT III**

**Introduction to Advanced Architecture:** ARM Processor and Memory Organization, Programmer’s Model, Instruction set, Instruction level Parallelism, Programming Input and output, Supervisor Mode, exceptions and Traps. (Ch2, 3 Wolf)

**UNIT IV**

**Interfacing with ARM:** LCD Interfacing, Stepper Motor Interfacing, DC motor Interfacing Using PWM, I<sup>2</sup>C and SPI protocol.

**Networked Embedded Systems:** Bus Protocols, I<sup>2</sup>C bus, CAN bus, Ethernet Enabled Systems, Design Example- Elevator Controller. (Ch8 Wolf)

**UNIT V**

**Introduction to Real-Time 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 and RTOS Environment (Ch 6 & 7 Simon).

**UNIT VI**

**Basic Design Using a Real-Time Operating System:** Principles, Semaphores and Queues, Hard Real-Time Scheduling Considerations, Saving Memory and Power, An example RTOS uC-OS / Vx-Works / RT Linux; 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 (Ch 8, 9 & 10 Simon).

**TEXT BOOKS:**

1. Computers and Components: principles of embedded *computing* system design, Wayne Wolf, Elseveir.
2. Embedded System Design – A Unifies Hardware/Software introduction - Frank Vahid, Tony D. Givargis, John Wiley, 2002.
3. The 8051 Microcontroller And Embedded Systems Using Assembly And C – Mazidi, Pearson Education India, 2<sup>nd</sup> edition, 2008.
4. An Embedded Software Primer, David E. Simon, Pearson Education.
5. ARM reference manual.

**REFERENCES:**

1. Embedded Systems, Raj Kamal, TMH.
2. LPC2148 ARM7 Microcontroller Manual.
3. ARM Microcontroller Interfacing Hardware and Software, Warwick A Smith, Elkator
4. ARM Microcontroller Part1: 35 Projects for Beginners, Bert Van Dam, Elkator
2. 8051 Application Notes by Atmel.

**Syllabus for B. Tech. IV Year II semester  
Computer Science and Engineering  
SCRIPTING LANGUAGES  
(PROFESSIONAL ELECTIVE –III)**

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
	<b>x</b>	<b>x</b>						<b>x</b>				

**Code: 3EC25**

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

**Unit I**

Introduction to Unix:- Architecture of Unix, Features of Unix , Unix utilities – process utilities, disk utilities, networking commands, text processing utilities and backup utilities.  
Introduction to UNIX file system, vi editor, file handling utilities, security by file permissions.

**Unit II**

**Grep:** Operation, grep Family, Searching for File Content.  
**Sed:** Scripts, Operation, Addresses, commands, Applications, grep and sed.  
**awk:** Execution, Fields and Records, Scripts, Operations, Patterns, Actions, Associative Arrays, String Functions, String Functions, Mathematical Functions, User – Defined Functions, Using System commands in awk, Applications, awk and grep, sed and awk.

**Unit III**

**Working with the Bash Shell:**

Introduction, Shell responsibilities, pipes and input redirection, output redirection, here documents, running a shell script, shell as a programming language, shell metacharacters, filename substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, Shell script examples, functions, debugging shell scripts.

**Unit IV**

**PYTHON**

Introduction to python language, python-syntax, statements, functions, Built-in-functions and Methods, Modules in python, Exception Handling

**Unit V**

Integrated Web Applications in python --- Building Small, Efficient python web Systems, Web Application Framework.

**Unit VI**

**Object-Orientation:** Data in Python, Data Structures in Python, Defining Classes

**The Python Database Interface**

Database Interfaces, the Underlying Interface Model, Some Database Modules, a Simple Database-Driven Web, SQL/Python Communication.

**TEXT BOOKS:**

1. UNIX and shell Programming Behrouz A. Forouzan, Richard F. Gilberg.Thomson.
2. Python Web Programming by Steve Holden

**REFERENCES:**

1. Your UNIX the ultimate guide, Sumitabha Das, TMH, 2<sup>nd</sup> Edition.
2. Programming in Python, Mark Lutz, Oreilly publications
3. Dive into python by Mark Pilgrim

**Syllabus for B. Tech. IV Year II semester  
Computer Science and Engineering  
E – COMMERCE  
(PROFESSIONAL ELECTIVE – III)**

a	b	c	d	e	f	g	h	i	j	k	l	m
		x		x	x			x	x		x	
						L	T		P/D		C	
						4	-		-		4	

Code: 3F822

**UNIT I****INTRODUCTION:**

ELECTRONIC commerce and physical commerce – Internet and WWW- Electronic Commerce-Frame work, deferent types of E-Commerce applications, E-Commerce Consumer scenarios, Advantages of Electronic Commerce and myths about electronic commerce.

**UNIT II****INFRASTRUCTURE AND WEB BASED TOOLS FOR E COMMERCE:**

**Client-side programming**– important factors -web page design and production-overview of HTML-structure of HTML document -CSS- JavaScript.

**Server-side programming** – three-tier model- common gateway interface (CGI), overview of Java servlet -architecture-overview of the servlet API.

**Database connectivity- relational database** -basic SQL statements- JDBC-drivers-API.

**UNIT III****SECURITY:**

**Internet payment systems** – 4C payment methods -SET protocol for credit payments-Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems. Micropayment system - E-check - E- retailing – PASS model.

**Internet security** – IPSec protocol- AH services- ESP-firewalls types- SSL.

**UNIT IV****ORGANIZATIONAL COMMERCE DATA INTERCHANGE MODELS:**

**Inter Organizational Commerce** - EDI, EDI Implementation, Value added networks.

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

**UNIT V**

**Web advertising and web publishing** – traditional vs Internet advertising- Internet advertising techniques and strategies-business models, pricing models and measurement for advertising – web site development methodologies

**UNIT VI****INTELLIGENT AGENTS:**

**Corporate Digital Library** - Document Library, digital Document types, corporate Data Warehouses. Advertising and Marketing - Information based marketing, on-line marketing process, market research.

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

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

**TEXT BOOK:**

1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.
2. Frontiers of electronic commerce – Kalakata, Whinston, Pearson.

**Syllabus for B. Tech. IV Year II semester  
Computer Science and Engineering  
ADVANCED COMPUTER ARCHITECTURE**

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
<b>x</b>	<b>x</b>											

**Code: 3EC18**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
<b>4</b>	<b>-</b>	<b>-</b>	<b>4</b>

**UNIT I**

Fundamentals of Computer design- Technology trends- cost  
Instruction set principles and examples- classifying instruction set- memory addressing- type and size of operands- addressing modes -operations in the instruction set- instructions for control flow- encoding an instruction set.-the role of compiler

**UNIT II**

Instruction level parallelism (ILP)- over coming data hazards- reducing branch costs –high performance instruction delivery- hardware based speculation- limitation of ILP

**UNIT III**

ILP software approach- compiler techniques- static branch protection - VLIW approach - H.W support for more ILP at compile time- H.W versus S.W Solutions

**UNIT IV**

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

**UNIT V**

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

**UNIT VI**

Storage systems- Types – Buses - RAID- errors and failures- bench marking a storage device- designing a I/O system.  
interconnection network media – practical issues in interconnecting networks.

**TEXT BOOKS:**

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

**REFERENCES:**

1. “Computer Architecture and parallel Processing” Kai Hwang and A.Briggs International Edition McGraw-Hill.
2. Advanced Computer Architectures, Dezso Sima, Terence Fountain, Peter Kacsuk, Pearson.
3. Parallel Computer Architecture, A Hardware / Software Approach, David E. Culler, Jaswinder Pal singh with Anoop Gupta, Elsevier

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>		<b>x</b>	

**Syllabus for B. Tech. IV Year II semester  
Computer Science and Engineering  
PROJECT PHASE - II**

**Code: 3E884**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	<b>15</b>	<b>10</b>

**Pre-Requisites:** All Courses till this semester

**Course Outcomes:**

- Students identify vast application areas for mobile / wireless communication / computing.
- They also understand the working principle of GSM technology.
- Students understand various media access control methods that are meant for wireless communication, each methods’ pros and cons
- Understand the issues in the Network layer in the wireless communication and identifying suitable solutions for the same
- Understand the issues in the Transport layer in the wireless communication and identifying suitable solutions for the same
- Understand MANETs with an example like Bluetooth technology.
- Understand Security Issues related to mobile computing and various solutions to mitigate the security problems.

Out of total 200 marks for project work (in the final year second semester), 50 marks shall be for Internal Evaluation and 150 marks for the External Evaluation at the end of the Semester.

External Evaluation of the project (viva-voce) shall be conducted by a committee appointed by the Chief Superintendent. The committee consists of an external examiner, HOD, a Senior Faculty Member and Internal Guide.

**The pattern of Internal Evaluation is as follows:**

**Division of marks for internal assessment – 50 marks**

- Progress of Project work and the corresponding interim report as evaluated by internal guides at the end of 5 weeks : 05 Marks
- Seminar at the end of 5 weeks : 05 Marks
- Progress of Project work as evaluated by guides at the end of 10 weeks : 05 Marks
- Seminar at the end of 10 weeks : 05 Marks
- Evaluation by the Guides ( at the end of 15 weeks) : 10 Marks
- Project Report : 05 Marks
- Final presentation and defense of the project : 15 Marks

If the project is conducted internally the marks will be given by Internal Guide himself.

**Division of Marks for External Evaluation – 150 Marks**

**Pattern of External Evaluation for Project**

- 1. Final Project Report : 30 Marks
- 2. Presentation : 20 Marks
- Demonstration / Defense of Project : 100 Marks

<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
<b>x</b>		<b>x</b>				<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>			

**Syllabus for B. Tech. IV Year II semester**  
**Computer Science and Engineering**  
**COMPREHENSIVE VIVA - III**

**Code: 3E885**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	-	2

**Pre-Requisites:** All Courses till this semester

**Course Outcomes:**

- Students are assessed in the courses they have undergone till the completion of that academic year.
- They are asked to comprehend the concepts in the core subjects and the elective subjects, to make them ready to face technical interviews which improve their employability skills.

There shall be a Comprehensive Viva-Voce in IV year II Semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of an External Examiner, Head of the Department and 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 till IV Year. The Comprehensive Viva-Voce is valued for 50 marks by the Committee.

There are no internal marks for the Comprehensive Viva-Voce.



<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>e</b>	<b>f</b>	<b>g</b>	<b>h</b>	<b>i</b>	<b>j</b>	<b>k</b>	<b>l</b>	<b>m</b>
					<b>x</b>	<b>x</b>	<b>x</b>		<b>x</b>			

**Syllabus for B. Tech. IV Year II semester  
Computer Science and Engineering  
TECHNICAL PAPER WRITING AND SEMINAR- IV**

**Code: 3E893**

<b>L</b>	<b>T</b>	<b>P/D</b>	<b>C</b>
-	-	2	1

**Pre-Requisites:** All Courses till this semester**Course Outcomes:**

- Students identify a topic from the current technical topics of their choice in the computer science domain and the allied fields, after surveying in the internet resources, journals and technical magazines in the library.
- Student learnt to arrange the contents of the presentation and scope of the topic, in an effective manner.
- Each student then presents the technical topic they chose in front of the panel and the fellow students, using the oratory skills.
- Students also face the questions posed by the panel and the students and answer them.

There shall be a Technical Paper writing and seminar evaluated for 25 marks in Fourth Year Second Semester. The evaluation is purely internal and will be conducted as follows:

Paper writing	: 05 marks
Final report	: 05 marks
Presentation before a departmental committee consisting of Head, a Senior Faculty and Supervisor	: 15 marks