

**COURSE STRUCTURE
AND
DETAILED SYLLABUS
for
B.Tech Four Year Degree Course – I - IV year
in
INFORMATION TECHNOLOGY
(IT)**

(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.



REENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(An Autonomous Institution approved by UGC and affiliated to JNTUH)
Yamnapet, Ghatkesar, Hyderabad – 501 301.

I YEAR I SEMESTER COURSE STRUCTURE

S.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	1	-	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
Total :			16	4	15	25	330	720

I YEAR II SEMESTER COURSE STRUCTURE

S.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	1	-	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
Total :			19	5	11	25	310	690

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.	121EM03	Computer Organization	3	1	-	3	30	70
3.	121EC02	Basic Electronics	3	1	-	3	30	70
4.	121CS03	Object Oriented Programming through Java	4	1	-	4	30	70
5.	121IT02	Mathematical Foundations of Computer Science	3	1	-	3	30	70
6.	121EE41	Basic Electrical Engineering	3	1	-	3	30	70
7.	121EN73	English –III (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
Total :			19	7	9	25	280	620

II YEAR II SEMESTER COURSE STRUCTURE

Sl.No	Code	Subject	L	T	P	C	Max Marks	
							Int	E
1.	121EC06	Switching Theory and Logic Design	3	1	-	3	30	70
2.	121MA07	Probability and Statistics	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.	121IT04	Design and Analysis of Algorithms	3	1	-	3	30	70
6.	121IT07	Shell Programming & Scripting Languages	3	1	-	3	30	70
7.	121EN74	English –IV (Effective English Communication and Soft Skills)	-	-	3	2	25	50
8.	121IT74	Comprehensive viva-voce-I	-	-	-	1	-	50
9.	121IT75	Data Base Management Systems LAB	-	-	3	2	25	50
10.	121IT79	Shell Programming & Scripting Languages Lab	-	-	3	2	25	50
Total :			18	6	9	2	255	62

III YEAR I SEMESTER COURSE STRUCTURE

Sl.No	Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1.	4EC07	Operating Systems	4	1	-	4	30	70
2.		Open Elective - I	3	-	-	3	30	70
3.	4EC05	Computer Networks	3	1	-	3	30	70
4.	4FC05	Data Warehousing and Data Mining	4	1	-	4	30	70
5.	4F517	Theory of Computation	3	1	-	3	30	70
6.	4GC06	Environmental Studies	3	1	-	3	30	70
7.	4HC76	Quantitative Aptitude	-	-	3	2	25	50
8.	4F576	Group Project	-	-	3	1	25	50
9.	4EC87	Operating systems and Computer Networks Lab	-	-	4	2	25	50
10.	4FC77	Data Warehousing and Data Mining Lab (DWDM Lab)	-	-	4	2	25	50
11	4F593	Technical Paper Writing and Seminar-V	-	-	2	1	25	-
Total :			20	5	16	28	280	620

Sl.No	Code	Open Elective - I
1.	4B515	Product and Service Design
2.	4D610	Embedded Systems
3.	4BC28	Robotics
4.	4HC51	Basic Spanish Language
5.	4HC41	Basic French Language
6.	4HC46	Basic German Language
7.	4ZC04	Entrepreneurship

III YEAR II SEMESTER COURSE STRUCTURE

SL.No	Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1.	4ZC01	Managerial Economics and Financial Analysis	3	1	-	3	30	70
2.		Open Elective - II	3	-	-	3	30	70
3.	4D609	Microprocessor and Interfacing	3	1	-	3	30	70
4.	4EC08	Compiler Design	3	1	-	3	30	70
5.	4FC12	Software Engineering and OOAD	4	1	-	4	30	70
6.		Professional Elective – I	4	1	-	4	30	70
7.	4HC77	Logical Reasoning	-	-	3	2	25	50
8.	4F678	Comprehensive Viva-Voce - II	-	-	-	1	-	50
9.	4F686	Compiler Design and OOAD Lab	-	-	4	2	25	50
10.	4DC74	Microprocessor and Interfacing Lab	-	-	4	2	25	50
11.	4F694	Technical Paper Writing and Seminar-VI	-	-	2	1	25	-
		Total :	20	5	13	28	255	620

Sl.No	Code	Open Elective - II
1.	4ZC03	Banking ,Insurance and Risk Management
2.	4BC16	Operations Research
3.	4ZC05	General Management and Entrepreneurship
4.	4G642	Fundamentals of Bioinformatics
5.	4ZC07	Fundamentals of Disaster Management

Sl.No	Code	Professional Elective – I
1.	4FC16	Advanced Java Technologies
2.	4EC18	Advanced Computer Architecture
3.	4FC08	Middle Ware Technologies
4.	4FC19	Semantic Web and Social Networks

IV YEAR I SEMESTER COURSE STRUCTURE

Sl.No	Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1.	4ZC02	Management Science	4	1	-	4	30	70
2.	4FC06	Computer Graphics	3	1	-	3	30	70
3.	4GC33	Intellectual Property Rights, Values and Ethics	2	1	-	2	30	70
4.	4E709	Software Testing	4	1	-	4	30	70
5.	4FC09	Web Technologies	4	1	-	4	30	70
6.		Professional Elective - II	4	1	-	4	30	70
7.	4FC21	Cryptography and Network Security	4	1	-	4	30	70
8.	4F780	Project Phase-I	-	-	2	1	50	-
9.	4F781	Industry Oriented Mini Project	-	-	-	2	25	50
10.	4F787	Software Testing and IS Lab	-	-	4	2	25	50
11.	4FC82	Web Technologies Lab	-	-	4	2	25	50
12.	4F795	Technical Paper Writing and Seminar-VII	-	-	2	1	25	-
		Total:	25	7	12	33	335	640

Sl.No	Code	Professional Elective - II
1.	4EC12	Software Project Management
2.	4F713	Electronic - Commerce
3.	4E714	Information Retrieval System
4.	4EC15	Cloud Computing

IV YEAR II SEMESTER COURSE STRUCTURE

Sl.No	Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1.	4FC15	Multimedia and Image Processing	4	-	-	4	30	70
2.		Professional Elective – III	4	-	-	4	30	70
3.	4F883	Project Phase-II	-	-	15	12	50	150
4.	4F884	Comprehensive Viva-Voce - III	-	-	-	2	-	50
5.	4F896	Technical Paper Writing and Seminar-VIII	-	-	2	1	25	-
		Total :	8	-	17	23	135	340

Sl.No	Code	Professional Elective – III
1.	4EC16	Mobile Computing
2.	4FC18	Computer Forensic
3.	4EC11	Artificial Intelligence
4.	4EC13	Software Architecture and Design Pattern

NOTE:

All the end examinations (Theory and Practical) are of three hours duration.

L-Theory**T-Tutorial****P-Practical/Drawing****C-Credits**

Code: 121EN01

Syllabus for B. Tech I Year I semester
Information Technology
English – I
 (English Language Teaching Through Literature)
 (Common to all branches)

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
Information Technology
ENGINEERING MATHEMATICS – I
 (Common to all branches)

Code: 121MA01

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

Code: 121PH01

ENGINEERING PHYSICS – 1

(Common to all branches)

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 Appla Naidu, VGS Book Links

**Syllabus for B. Tech. I Year I semester
Information Technology
ENGINEERING CHEMISTRY-I
(Common to all Branches)**

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, Kolrausch'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 – 14th 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).

121IT01

**Syllabus for B. Tech. I Year I semester
Information Technology
COMPUTER PROGRAMMING
(Common to all Branches)**

L	T	P	C
3	1	0	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 8th edition BPB publications.
3. Computer programming for teens by Mary Farrell.

**Syllabus for B. Tech I Year I semester
Information Technology
ENGINEERING DRAWING-I**

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
Information Technology
ENGLISH LANGUAGE LAB-I**

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
Information Technology
ENGINEERING PHYSICS LAB –I**

Code: 121PH71

L	T	P/D	C
-	-	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
Information Technology
ENGINEERING CHEMISTRY LAB**

Code: 121CH71

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

Minimum any Six of the following Experiments

1. Estimation of MnO_2 in Pyrolusite.
2. Estimation of Hardness of water.
3. Estimation of Mn^{+2} / 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 penetration Test.

**Syllabus for B. Tech I Year I semester
Information Technology
Code: 121IT71 COMPUTER PROGRAMMING LAB
(Common to all Branches)**

L	T	P/D	C
-	-	3	2

1. 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.

2. Unit II (Cycle 2)

1. Write an algorithm, flowchart, and C program for:
 1. Finding the area and circumference of a circle of given radius.
 2. Finding the volume of a sphere of given radius.
 3. Finding the lateral surface area of a right circular cone of given base radius and height.
 4. Finding selling price of an item, given its cost price and profit percent.
 5. Finding the interest on a given principal for a given period of time at a given rate of per year.
2. Write a C program to display all the sizes of data types in C.
3. 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.

3. 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.

4. 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:
 1. $1+x+x^2+x^3+\dots+x^n$, given x and n.
 2. $1! + 2! + 3! + \dots + n!$, given n.
 3. $1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10! + \dots$ to n terms where the n^{th} term becomes less than 0.0001.

5. 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.

6. Unit III (Cycle 6)

1. Write C functions for the following:
 1. A function that takes an integer n as argument and returns 1 if it is a prime number and 0 otherwise.
 2. A function that takes a real number x and a positive integer n as arguments and returns x^n .
 3. A function that takes a positive integer n as an argument and returns the n^{th} Fibonacci number.
2. Using recursion write C functions for the following:
 1. Factorial of a non-negative integer n.
 2. Number of combinations of n things taken r at a time.
 3. Greatest Common Divisor of two integers.

4. Least Common Multiple of two integers.

7. 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.
 1. Larger of two numbers.
 2. Smaller of two numbers.
 3. 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.

8. 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.
2. 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.
3. 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.

9. 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.

10. 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.

11. 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.

12. Unit VI (Cycle 12)

1. 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.
 2. Open the file created above and display the contents of the file.
 3. Copy a file into some other file, file names given by the user or by command line arguments.
 4. Append a user mentioned file to another file.
 5. Reverse the first n characters of a file.

**Syllabus for B. Tech I Year I semester
Information Technology
ENGINEERING WORKSHOP-I**

Code: 121ME71

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
Information Technology
IT WORKSHOP-I**

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.

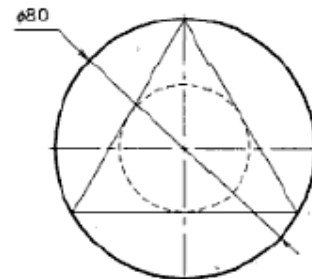
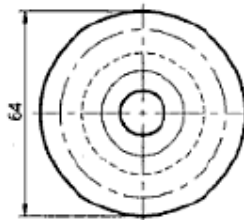
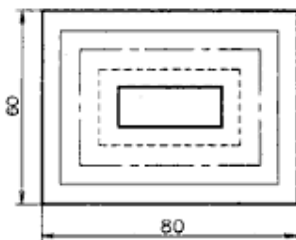
Cyber Ethics: Access websites and email, effectively and securely browse (banksites, https webpages) and share the data, categories of websites (.com, .in, .edu, .org).

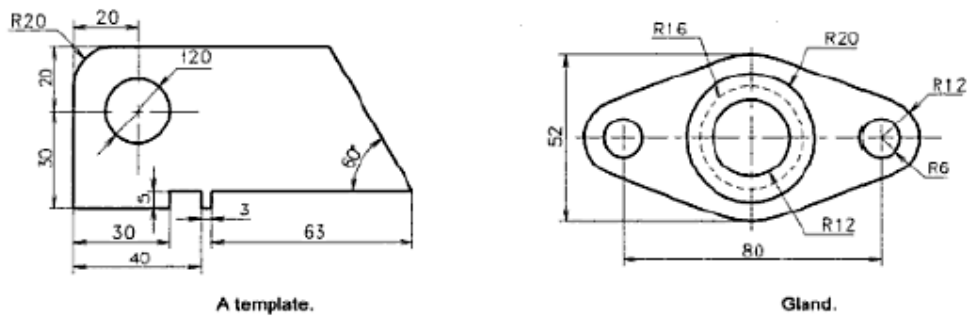
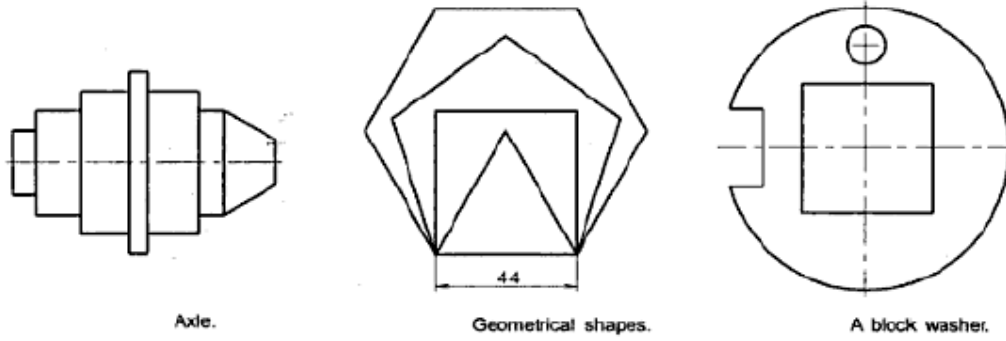
Week 7: Drafting of 2D Figures:

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.

Code: 121EN02

Syllabus for B. Tech I Year II semester
Information Technology
ENGLISH – II
(English Language Teaching Through Literature)

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 : Polonious 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
Information Technology**

Code: 121MA03

ENGINEERING MATHEMATICS – II

L	T	P/D	C
3	1	-	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-III**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-IV**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-V

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

UNIT-VI**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
Information Technology
ENGINEERING PHYSICS– II**

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

**Syllabus for B.Tech. I Year II semester
Information Technology
DATA STRUCTURES AND C++**

Code:121CS01

L	T	P/D	C
4	1	-	4

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(ii)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
Information Technology**

Code: 121ME02

ENGINEERING DRAWING - II

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 / Scietech 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
Information Technology
ENGINEERING CHEMISTRY-II
(Common to all Branches except BT)**

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 Tropsech’s process; Gaseous fuels – natural gas, analysis of flue gas by Orsat’s method Combusion – problems, Calorific value of fuel – HCV, LCV, determination of calorific value by Junker’s gas calorie meter. 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 – 14th 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
Information Technology
BASIC MECHANICAL ENGINEERING**

Code: 121ME04

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

Internal combustion engines: Internal combustion engines, definitions, classification, components, working of two- stroke, four stroke cycle engines, SI and CI Engines, performance parameters, 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, Schematic of gas turbine power plants - closed and open cycle types

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:**

Concept of Hot working and cold working, 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
Information Technology
ENGLISH LANGUAGE LAB-II**

Code: 121EN72

L	T	P/D	C
-	-	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

**Syllabus for B. Tech. I Year II semester
Information Technology**

Code: 121CS71 DATA STRUCTURES AND C++ LAB

L	T	P/D	C
-	-	3	2

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.

	Syllabus for B. Tech I Year II semester Information Technology			
Code: 121PH72	ENGINEERING PHYSICS LAB-II			
	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
Information Technology
IT WORKSHOP-II**

Code: 121IT73

L	T	P/D	C
-	-	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:

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

**Syllabus for B. Tech. II Year I semester
Information Technology
ENGINEERING MATHEMATICS – III
(Common to All Branches except Bio-Tech)**

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
Information Technology
COMPUTER ORGANIZATION**

CODE:121EM03

L	T	P/D	C
3	1	-	3

UNIT - I

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

UNIT - II

Register Transfer Language and Microoperations: Register Transfer language. Register Transfer Bus and memory transfers, Arithmetic Microoperations, logic micro operations, shift micro operations, Arithmetic logic shift unit. Instruction codes. Computer Registers Computer instructions – Instruction cycle. memory – Reference Instructions. Input – Output and Interrupt. STACK organization. Instruction formats. Addressing modes. DATA Transfer and manipulation. Program control. Reduced Instruction set computer.

UNIT - III

Control Unit Design: Control memory, Address sequencing, microprogram example, design of control unit Hard wired control, Microprogrammed control.

UNIT - IV

Computer Arithmetic & Logic Operations : Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – point Arithmetic operations. Decimal Arithmetic unit Decimal Arithmetic operations, AND, OR, NOT & XOR operations.

UNIT - V

The Memory System : Basic concepts semiconductor RAM memories. Read-only memories Cache memories performance considerations, Virtual memories secondary storage. Memory management and MMU.

UNIT - VI

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

TEXT BOOKS :

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

REFERENCES :

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI.
2. Computer Architecture: Fundamentals and principles of Computer Design, Joseph D. Dumas II, BS Publication.

Syllabus for B. Tech. II Year I semester
Information Technology
BASIC ELECTRONICS
(COMMON TO CSE, IT AND BT)

Code: 121EC02

L	T	P/D	C
3	1	-	3

UNIT-I

SEMICONDUCTOR DIODES AND APPLICATIONS: p-n junction diode, Characteristics and Parameters, Diode approximations, DC load line, Temperature dependence of p-n characteristics, AC equivalent circuits, Zener diodes. Half-wave diode rectifier, Ripple factor, Full-wave diode rectifier, Other full-wave circuits, Shunt capacitor Power supply performance, Zener diode voltage regulators. (Qualitative treatment only) - 08 periods

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, Bias circuit design, Thermal Stability of Bias Circuits (Qualitative discussions only). - 08 periods

UNIT-III

OTHER DEVICES: Silicon Controlled Rectifier (S.C.R), SCR Control Circuits, More S.C.R applications; n-junction transistor, UJT applications, Junction Field effect Transistors (Exclude Fabrication and Packaging), JFET Characteristics, FET Amplification. - 08 periods

UNIT-IV

AMPLIFIERS & OSCILLATORS: Decibels and Half power points, Single Stage CE Amplifier and Capacitor coupled two stage CE amplifier (Qualitative discussions only), Series voltage negative feedback and additional effects of Negative feed back (Qualitative discussions only), The Barkhausen Criterion for Oscillations, BJT RC phase shift oscillator, Hartley, Colpitts and crystal oscillator (Qualitative discussions only). -08 periods

UNIT-V

SWITCHING AND IC VOLTAGE REGULATORS: IC 723 voltage regulators and three terminal IC regulators, DC to AC converter, switching regulators, voltage multipliers, UPS, SMPS.

UNIT-VI

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

DIGITAL LOGIC: Boolean algebra, Logic gates, Half-adder, Full-adder, Parallel Binary adder. - (06 periods)

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.

**Syllabus for B. Tech. II Year I Semester
Information Technology**

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Code: 121CS03

L	T	P/D	C
4	1	-	4

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 –boarder, 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
Information Technology
MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE

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:

- I. Tremblay J. P. & Manohar R., *Discrete Mathematical Structures with applications to Computer Science*, TMH, 2006.
- II. Dr. D. S. Chandrasekharaiah, *Mathematical Foundations of Computer Science (Discrete Structures)*, Prism, 2006.
- III. 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
Information Technology
BASIC ELECTRICAL ENGINEERING**

Code: 121EE41

L	T	P/D	C
3	1	-	3

Unit – I: Introduction to Electrical Engineering :

Review of Ohm's Law, Basic circuit components, Kirchoff's Laws. Types of sources, Source transformation, V- I relationship for passive elements. Series parallel circuits, Star - delta and delta - star transformation. Simple problems, Principle of measuring instruments, MI & MC ammeters and voltmeters.

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

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 induction motors:

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

Unit – VI: Elements of Power System:

Introduction to Power Generation, Transmission and distribution.

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.2nd 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.2nd edition

Syllabus for B. Tech. II Year I Semester

Code: 121EN73

Information Technology**ENGLISH - III****FUNCTIONAL AND COMMUNICATIVE WRITTEN ENGLISH**

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.

**Syllabus for B. Tech. II Year I Semester
Information Technology
Basic Electrical Engineering Lab**

Code: 121EE91

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

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

Syllabus for B. Tech. II Year I Semester
Information Technology
BASIC ELECTRONICS LAB

Code: 121EC84

L	T	P/D	C
-	-	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
Information Technology
OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB**

Code: 121CS74

L	T	P/D	C
-	-	3	2

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.
 D) Write a program to print the following format.

```

*
 * *
* * *
* * * *
```

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:

- (i) To assign instance variables(Constructors-Zero argument and parameterized)
 (ii) To deposit an amount
 (iii) 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.
- C) Write a program to demonstrate method overriding.
- D) Write a program to demonstrate the uses of “super” keyword (three uses)
- E) Write a program to demonstrate dynamic method dispatch(i.e .Dynamic polymorphism).
- 4)
- A) Write a program to check whether the given string is palindrome or not.
- B) Write a program for sorting a given list of names in ascending order.
- C) Write a program to count the no. of words in a given text.
- 5)
- A) Define an interface “GeometricShape” 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
- B) 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).
- 6) 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.
- 7)
- A) Define two threads such that one thread should print even numbers and another thread should print even numbers.
- B) Modify the Account class to implement thread synchronization concept.
- C) 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).
- D) Write a program to implement thread priority.
- 8) Design the user screen as follows and handle the events appropriately.

Add Window

First Number

Second Number

Result

9)Write a program to simulate a calculator

10)Write a program to create feedback form
Feedback Form

Date: 2/12/2020

Faculty Name: Vengal Rao

Subject: DSP
Sem

Year/Semester: III/IV 1st

Optional

Student Name : FORMTEXT

Roll Number: FORMTEXT

Branch : FORMDROPDOWN

Review Guidelines					
Complete this peer review, using the following scale: NA = Not Applicable 1 = Unsatisfactory 2 = Marginal 3 = Meets Requirements 4 = Exceeds Requirements 5 = Exceptional					
Evaluation					
	(5) = Exceptional	(4) = Exceeds Requirements	(3) = Meets Requirements	(2) = Marginal	(1) = Unsatisfactory
Required Skills And Knowledge in the Class	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX
Response To Questions	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX
Ability To Learn And Teach New Skills	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX
English Speaking Skills	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX
Making Students To Involve In The Class	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX
The Way Syllabus is Covered	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX	FORMCHECKBOX

11) Develop a simple client server program(one way communication)

12) Develop a client that sends data to the server and also develop a server that sends data to the client(two way communication)

13) 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**Information Technology**

Code: 121EC06

SWITCHING THEORY AND LOGIC DESIGN

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-Triggering 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 II semester
Information Technology
PROBABILITY AND STATISTICS**

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 The 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, χ^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, 6th 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
Information Technology**

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
Information Technology**

Code : 121EC32

DATA COMMUNICATIONS

L	T	P/D	C
3	1	-	3

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
Information Technology**

Code: 121IT04

DESIGN AND ANALYSIS OF ALGORITHMS

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**Information Technology**

Code: 121IT07

SHELL PROGRAMMING & SCRIPTING LANGUAGES

L	T	P/D	C
3	1	-	3

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 : 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 III: Introduction to PERL and Scripting

Scripts and Programs, Origin of Scripting, Scripting Today, Characteristics of Scripting Languages, Uses for Scripting Languages, Web Scripting, and the universe of Scripting Languages. PERL – Names and Values, Variables, Scalar Expressions, Control Structures, arrays, list, hashes, strings, pattern and regular expressions, subroutines.

Unit IV : Advanced PERL

Finer points of looping, pack and unpack, file system, eval, data structures, packages, modules, objects, interfacing to the operating system, creating internet ware applications, dirty hands internet programming, security issues.

Unit V : PYTHON

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

Unit VI : PHP Basics

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

TEXT BOOKS :

1. Your Unix the ultimate guide, Sumitabha Das, TMH. 2nd Edition.
2. The World of Scripting Languages, David Barron, Wiley Publications.
3. The Practical Programming Python, O'Reilly Publications.

REFERENCES :

1. Unix and shell Programming Behrouz A. Forouzan, Richard F. Gilberg. Thomson
2. Perl by Example, E.Quigley, Pearson Education.
3. Programming Perl, Larry Wall, T.Christiansen and J.Orwant, O'Reilly, SPD.
4. PHP and MySQL by Example, E.Quigley, Prentice Hall (Pearson).
5. Perl Power, J.P.Flynt, Cengage Learning.
6. PHP Programming solutions, V.Vaswani, TMH.
7. Beginning PHP and MySQL, 3rd Edition, Jason Gilmore, Apress Publications.

Syllabus for B. Tech. II Year II semester
Information Technology
ENGLISH - IV
EFFECTIVE COMMUNICATION AND SOFT SKILLS

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 Whi tmore:
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

**Syllabus for B. Tech. II Year II semester
 Information Technology**

Code: 121IT75

DATABASE MANAGEMENT SYSTEMS LAB

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, NOT EXISTS, 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, USER 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 McGraw Hill.
- 3)SQL & PL/SQL for Oracle 10g, Black Book, Dr.P.S. Deshpande.

**Syllabus for B. Tech. II Year II semester
Information Technology
SHELL PROGRAMMING & SCRIPTING LANGUAGES LAB**

	L	T	P/D	C
Code: 121IT79	-	-	3	2

1. Write a shell script that accepts a filename, starting and ending line numbers as arguments and displays all the lines between the given line numbers.
2. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
3. Write a shell script that displays all the files in the current directory to which the user has read, write and execute permissions.
4. Write a shell script that receives any number of filenames as arguments, checks if every argument supplied is a file or a directory and reports accordingly. Whenever the argument is a file the number of lines on it is also reported.
5. Write a shell script that accepts a list of filenames as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
6. Write a shell script to list all of the directory files in a directory.
7. Write a shell script to find factorial of a given integer.
8. Write an awk script to count the number of lines in a file that do not contain vowels.
9. Write an awk script to find the number of characters, words and lines in a file.
10. a. Write a perl program that computes the circumference of a circle by prompt for and accept a radius from the person running the program.
b. Write a perl program that reads a string and a number, and prints the string the number of times indicated by the number on separate lines. (Hint: use the "x" operator.)
11. a. Write a perl program that reads a list of strings on separate lines and prints out the list in reverse order. If you're reading the list from the terminal, you'll probably need to delimit the end of the list by pressing your end-of-file character, probably CTRL-D under UNIX or Plan 9; often CTRL-Z elsewhere.
b. Write a perl program that reads a number and then a list of strings (all on separate lines), and prints one of the lines from the list as selected by the number.
12. a. Write a perl program that reads in a list of strings on separate lines and then prints out the list of strings in reverse order - without using reverse on the list. (Recall that <STDIN> will read a list of strings on separate lines when used in an array context.)
b. Write a perl program that prints a table of numbers and their squares from zero to 32. Try to come up with a way where you don't need to have all the numbers from 0 to 32 in a list, and then try one where you do. (For nice looking output,
printf "%5g %8g\n", \$a, \$b
prints \$a as a five-column number and \$b as an eight-column number.)
c. Write a program that reads in a string, then prints that string and its mapped value according to the mapping presented in the following table:

Input	Output
Red	apple
Green	leaves
Blue	Ocean
Yellow	lemon

13. a. Write a program that acts like cat, but reverses the order of the lines of all the lines from all the files specified on the command line or all the lines from standard input if no files are specified. (Some systems have a utility like this named tac.)
 b. Construct a regular expression that matches:
- at least one a followed by any number of b's
 - any number of backslashes followed by any number of asterisks (any number might be zero)
 - three consecutive copies of whatever is contained in \$whatever
 - any five characters, including newline
 - the same word written two or more times in a row (with possibly varying intervening whitespace), where "word" is defined as a nonempty sequence of nonwhitespace characters
14. A macro processor reads a file containing macro definitions and uses, and replaces the uses with the definitions. A macro is a named replacement text, usually with parameters to substitute. For instance, if assignment four reads this input:
- ```
This is the first line.
!define frank=Mr. Frank #1 Stein
For more information, see @frank(N.),
@frank("Steiney"), Jr., or @frank(Furter), Esq.
It should output this:
This is the first line.
For more information, see Mr. Frank N. Stein,
Mr. Frank "Steiney" Stein,Jr., or Mr. Frank Furter Stein, Esq.
```
15. a. Write a python program to find the given number is positive or not.  
 b. Write a python program to find roots for  $ax^2+bx+c=0$  using built-in functions.  
 c. Write a python program which opens a file and writes the content in the file and comes out gracefully (file i/o exceptions)
16. Write a python program to build a calculator using module based approach.  
 Consider an arithmetic operation as a module.
17. Write a PHP code to display Information pertaining to the php content of the Web browser.  
 18. Write a PHP code to implement usage of Control flow statement to solve real time problems.  
 19. Write a PHP code to interact with files using FILO I/O modules and count no of words in a given file.



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

**Syllabus for B. Tech I Year I semester  
Information Technology  
ENGLISH – I**

**Code: 4H101**

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The proposed syllabus is covered in 5 units: First unit is a refresher course to calibrate the students and test their previous knowledge in English. It is a bridge course to identify their ability in different areas of language learning. A diagnostic test is followed by this course. Exercises based on the test items are provided as a remedial course.

**UNIT 1: Refresher Course**

Exercises on English Vocabulary and Grammar are practiced and followed up by a Diagnostic Test

- **Grammar - Parts of Speech**
- **Correction of Sentences**
- **Vocabulary**
- **One Word Substitutes**

**DIAGNOSTIC TEST 1**

**REMEDIAL CLASSES**

Exercises on different aspects to improve basic English language learning is provided

**WRITING:** Guided paragraph

**UNIT 2: Short Story**

Short Story & Vocabulary (*Devoted Son* by Anita Desai)

Vocabulary: Words from the text

- a. Meanings of Words
- b. Usage of Words
- c. Synonyms of Words
- d. Antonyms of Words
- e. Usage of Sentences

Grammar: Types of Sentences – Simple / Compound / Complex

Conversation of one type into the other / Rules of conversation

Exercises based on simple to compound, simple to complex, compound to complex, complex to compound, complex to simple, etc.

Writing: Paragraph Writing

Speaking: Asking questions to gain information (*working in pairs*)

*“Wh” Questions; Tag Questions; Command and Requests; Greeting and Leave Taking; Asking for Permission*

**UNIT 3: Public Address**

***Evolution of Indomitable Spirit in Youth* by APJ Abdul Kalam**

Vocabulary: Words from the text

- a. Meanings of Words
- b. Usage of Words
- c. Homonyms, Homophones and Homographs
- d. Words often confused and sentences with such words

Grammar: Verbs, Types of Verbs, Finite / Infinite, Transitive and Intransitive, Auxiliary, Tenses (Regular and Irregular Verb Tenses)

Exercises based on Verbs and their various usages

Writing: Writing a paragraph on any famous / inspirational person

Speaking: *Greeting and Leave Taking, Apologizing and Inviting (working in pairs)*

**DIAGNOSTIC TEST 2**

**Remedial Activity 2**

**UNIT 4: Creativity**

Lesson: *A Tea Party* by **Ruth Prawar Jhabwala**

Vocabulary: Text based words, meanings and sentences / Affixation, Prefixes, Infixes and Suffixes

Grammar: Sentences Using the Correct Form of given base word

Writing: Informal / Formal Letter Writing (*Salutation, Introduction, Body, Conclusion, Complimentary Close and Signature*)

Speaking: Situational Dialogues

**UNIT 5: Inspiring Speech**

***Moon Shot Speech (1961)* by John F. Kennedy**

Vocabulary: Text Based Words / Meanings

Collocations: Words that go together

Exercises based on Collocations

Phrasal Verbs

Exercises

Grammar: Scrambled Words and Writing Sentences

Writing: Summarizing

Speaking: Topic related short speeches / Narrating an anecdote

***Prescribed Text:* Compiled by Faculty - Department of English (SNIST)**

***Suggested Reading:* Essential English Grammar by Raymond Murphy**

***Intermediate English Grammar by Raymond Murphy***

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**Syllabus for B. Tech I Year I semester - Information Technology**

**ENGINEERING MATHEMATICS –I**  
(Common to all branches except Bio-Technology)

**Code: 4H111**

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**UNIT-I**

**Differential Calculus:** Rolle's Theorem, Lagrange's and Cauchy mean value theorems (without proofs), Taylor's series and Maclaurin's series.

Applications: Approximating definite integrals.

**Functions of several variables:** Continuity of function of variables, Partial derivatives of higher order, Euler's theorem, Total differentiation, Jacobians and its properties. Maxima and minima values of a function of several variables- Applications.

**UNIT-II**

**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, Newton's Law of Cooling, Orthogonal Trajectories.

**UNIT-III**

**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.

Application: Bending of beams, Simple harmonic motion and LCR circuit.

**UNIT-IV**

**Multiple integrals**

Double Integrals, Iterated Integrals-Integrals over Rectangular and General Regions, Change of Variables, Polar Coordinates, Triple integrals in Cartesian coordinates, Change of variables.

Applications: Moment of Inertia, Calculation of volumes using triple integrals.

**UNIT-V**

**Vector Differential Calculus:** Scalar and Vector Fields, Level surfaces, Curvature and Torsion of a curve in space, Directional Derivative: Gradient of a Scalar Field, Divergence and Curl of a vector field, Laplacian operator and related properties.

Applications: Velocity and Acceleration of a particle.

**UNIT-VI**

**Vector Integral Calculus:** Line Integral, Surface Integral, Volume Integral and Verification of problems on Green's Theorem in Plane, Gauss-Divergence Theorem and Stoke's Theorem.

Applications: Finding potential function of Irrotational fields in fluid dynamics.

**TEXT BOOKS:**

1. Mathematical Methods of Science and Engineering, Kanti B.Datta, CENGAGE Learning.
2. Higher Engineering Mathematics, B.S. Grewal, Khanna Publications, New Delhi.
3. Engineering Mathematics, B. V. Ramana, Tata McGraw Hill Publishing Company Ltd.
4. Erwin Kreyszig: Advanced Engineering Mathematics, John Wiley and Sons, 8<sup>th</sup> Edition.

**REFERENCE BOOKS:**

1. A Text Book of KREYSZIG's Engineering Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications.
2. Advanced Engg. Mathematics, S. R. K. Iyengar and R.K. Jain, Narosa Publishing House, London, 2002

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**Syllabus for B. Tech I Year I semester**  
**Information Technology**  
**ENGINEERING PHYSICS – I**  
**(Common to all branches)**

Code: 4H121

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**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. Atomic densities along various important directions and planes and comparison of deformability of BCC, FCC and hcp metals.

**UNIT-II**

**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.

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

**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 ,velocity of ,point of  $\bar{e}$  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. P K Palanisamy, Engineering Physics, Sitech Publications

**Reference Books:**

1. Charles Kittel, Introduction to Solid State Physics, John Wiley Publisher
2. Neil W. Ashcroft, N. David Mermin,, Solid State Physics, Thomson Publisher,
3. Donald Allan McQuarrie, Statistical Mechanics, University Science Books Publisher, California
4. Sathya Prakash, Statistical Mechanics, Pragathi Prakashan Publisher
5. Quantum Mechanics by G. Aruldas
6. John L Powel, Quantum Mechanics, Narosa Publications
7. Ramamurti Shanker, Principles of quantum Mechanics, Springer Publication
8. M Chandrashekar and P Appala Naidu, Applied Physics, VGS Book Links
9. K. Vijaya Kumar, S Chandralingam, Modern Engineering Physics, S Chand Publisher

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**Syllabus for B. Tech I Year I semester  
Information Technology  
ENGINEERING CHEMISTRY-I  
(Common to all)**

**Code: 4H131**

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**UNIT – I WATER TECHNOLOGY**

- (a) **Water quality Parameters**:-Hardness of water – types of hardness (temporary and permanent). Estimation of hardness of water by EDTA Method.
- (b) **Water for Industrial purpose**: Water for steam making, Boiler troubles-Carry over (priming &foaming).Boiler Corrosion, Scale and sludge, caustic embrittlement.
- (c) **Treatment of Water**: Internal Conditioning- Phosphate, Carbonate & Calgon conditioning. External Treatment: Lime- Soda, Zeolite, Ion-exchange process, Desalination-Reverse osmosis and electro dialysis. Methods of Treatment of Water for Domestic purpose-Sedimentation, Coagulation, Filtration, Disinfection-Chlorination, Ozonization. (Numerical problems on calculation temporary and permanent hardness). **Engineering applications: Methodology and working of mineral water plant (ISI) for drinking purpose.**

**UNIT – II ELECTROCHEMISTRY**

**Electro Ionics**:- Conductance – conductors (metallic and electrolytic) – Types of conductance – specific, Equivalent, molar conductance – Effect of dilution on conductance – Kohlrausch’s law and its applications i) Determination of equivalent conductance for weak electrolytes ii) Degree of dissociation iii) Solubility of sparingly soluble salts – numerical problems on Kohlrausch’s law.

**Electrodiodes** :- E M F of electrochemical cells – cell notation and cell reaction – electrode potential (oxidation and reduction) Nernst Equation and its applications. Types of electrodes (a) Gas electrode (H<sub>2</sub> electrode) (b) Metal ion electrode (Zn/Zn<sup>+2</sup>) (c) Redox electrode (Quinhydrode electrode) (d) Metal – Metal insoluble salt electrode(SCE) (e) Ion selective electrode. **Engineering Applications – determination of P<sup>H</sup>.**

**UNIT – III ELECTROCHEMICAL ENERGY SOURCES – BATTERIES**

**Cell and batteries** – types of batteries

- (a) Primary batteries – Lechalanche cell (dry cell), Lithium cell
- (b) Secondary batteries(Accumulators) – Lead acid battery, Alkaline battery Ni-Cd battery, , Lithium-ion battery
- (c) Fuel cells- H<sub>2</sub> – O<sub>2</sub> fuel cell & Methanol – Oxygen fuel cell
- (d) Photovoltaic Cell- Solar Cell
- Engineering applications – future water powered car, solar cells in domestic and automobiles.**

**UNIT – IV CORROSION AND ITS CONTROL**

Corrosion – Basic concepts – Mechanism of chemical, electrochemical Corrosion (absorption of O<sub>2</sub> and evaluation of H<sub>2</sub>) – Pilling - Bed worth rule – Types of electrochemical Corrosion – Galvanic Corrosion – Pitting Corrosion – Concentration Cell Corrosion – Factors affecting the rate of Corrosion.

**Engineering Applications:**

- a) **Corrosion Control Methods-** Cathodic protection – sacrificial anode and impressed current cathode method.
- b) **Protective Coatings --** Surface preparation for metallic coatings like hot dipping (**tinning and galvanizing**) metal cladding (**Al Cladding**) electro plating (**copper plating**) and electroless plating (**Nickel plating**). Methodology and production of gold decorative articles.

**UNIT – V PHASE EQUILIBRIA AND ALLOYS**

**Phase rule:-** Introduction, definition of terms with examples, one components system – Water system, reduced phase rule – Two component systems, classification – lead – silver system.

**Alloys:** - Introduction – Definition – properties of alloys – significance of alloying, functions and effect of alloying elements. **Engineering applications of ferrous alloys – Ni chrome and stainless steel, nonferrous alloys – brass and bronze.**

**UNIT – VI NANO CHEMISTRY**

**Basics** – distinction between molecules, nanoparticles and bulk materials, size – dependent properties.

**Nano Particles:** Nano cluster, Nano rod, Nano tube (CNT) and Nano wire.

**Synthesis:** Precipitation, thermolysis, hydrothermal, solvothermal, electrode position, laser ablation, wet chemical methods of preparation (micro emulsion – solvent extraction Reduction – chemical oxidation Reduction. **Applications of Nano materials in Medicine and Energy systems** - Carbon nanotubes in efficient solar cell and fuel cells.

**Text Books:**

1. 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 & Mukkanti, S. Chand & CO, New Delhi (2014).
3. Chemistry of Engineering Materials by C.V. Agarwal, C.P. Murthy, A. Naidu; BS publications.
4. Text Book of Nano Science and Nano Technology by B.S. Murthy and P. Shankar, University press.

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**Syllabus for B. Tech. I Year I semester**  
**Information Technology**  
**COMPUTER PROGRAMMING**  
 (Common to all Branches)

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**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.

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**Syllabus for B. Tech. I Year I semester**  
**Information Technology**  
**ENGINEERING DRAWING – I**  
**(Common to all branches)**

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**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 2nd Edition [Basant Agrawal](#), [C. M. Agrawal](#), Tata McGraw-Hill Education

**REFERENCES:**

1. Engineering Drawing, K.Venugopal/G.Sreekanjana, New Age International Publishers.

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**Syllabus for B. Tech I Year I semester  
Information Technology  
ENGLISH LANGUAGE LAB-I**

**Code: 4H171**

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**Phonetics:**

1. Vowels: Long Vowels
2. Vowels: Short Vowels
3. Vowels: Diphthongs
4. Consonants: Voiced Consonants
5. Consonants: Voiceless Consonants
6. Stress or Accent
7. Intonation

**Communication Skills:**

1. Situational Dialogues  
Speaking Activity – Introducing Oneself; Introducing Others; Meet and Greet
2. JAM Sessions
3. Describing an object/person/situation/place
4. Telephonic Conversations
5. Giving Directions
6. Review of a story/film/novel.

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**Syllabus for B. Tech I Year I semester**  
**Information Technology**  
**ENGINEERING PHYSICS LAB – I**  
**(Common to all branches)**

**Code: 4H181**

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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 Circuit
6. L C R series and parallel resonance
7. Determination of rigidity modulus of a given wire – Torsional pendulum
8. Determination of Planck’s constant
9. Determination of the acceleration to gravity and radius of gyration by compound pendulum.

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

**Prescribed Practical Book by Dr. Y. Aparna, Professor & HOD of Physics Department, JNTUH**

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**Syllabus for B. Tech I Year I semester**  
**Information Technology**  
**ENGINEERING CHEMISTRY LAB**

**Code: 4H186**

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*The objective of the Laboratory practicals is to make the student to acquire the basic Knowledge used for engineering applications.*

1. Determination of Hardness of a **ground water** sample.
2. Preparation of **Thiokol rubber**.
3. Determination of **Viscosity of a lubricant** by Redwood Viscometer..
4. Estimation of Copper in **Brass alloy** (HYPO)
5. Estimation of Calcium in **Portland cement**.
6. Estimation of Iron content in **Ore sample** using Colorimeter (KSCN)
7. Estimation of **rate of Corrosion of Aluminium** in acidic and alkaline medium.
8. Determination of **Mohr's salt** by **Potentiometric** method.
9. Determination of **Calorific value** of Solid fuel by using Bomb Calorimeter.
10. Experiment on Green chemistry; **Aldol condensation**(not by Classic route)
11. Determination of Flash point and fire point of a **lubricant**
12. Determination of strength of Strong Acid using Strong Base (**HCl vs NaOH**) by **Conductometric titrations**.

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**Syllabus for B. Tech I Year I semester**  
**Information Technology**  
**COMPUTER PROGRAMMING LAB**  
(Common to all Branches)

**Code: 4F171**

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**1. 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.

**2. Unit II (Cycle 2)**

1. Write an algorithm, flowchart, and C program for:
  1. Finding the area and circumference of a circle of given radius.
  2. Finding the volume of a sphere of given radius.
  3. Finding the lateral surface area of a right circular cone of given base radius and height.
  4. Finding selling price of an item, given its cost price and profit percent.
  5. Finding the interest on a given principal for a given period of time at a given rate of per year.
2. Write a C program to display all the sizes of data types in C.
3. 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.

**3. 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.

**4. 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:
  1.  $1+x+x^2+x^3+\dots+x^n$ , given x and n.
  2.  $1! + 2! + 3! + \dots + n!$ , given n.
  3.  $1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10! + \dots$  to n terms where the  $n^{\text{th}}$  term becomes less than 0.0001.

**5. 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.

**6. Unit III (Cycle 6)**

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

**7. 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.
  1. Larger of two numbers.
  2. Smaller of two numbers.
  3. 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.

**8. 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.
2. 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.
3. 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.

**9. 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.

**10. 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.

**11. 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.

**12. Unit VI (Cycle 12)**

1. 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.
  2. Open the file created above and display the contents of the file.
  3. Copy a file into some other file, file names given by the user or by command line arguments.
  4. Append a user mentioned file to another file.
  5. Reverse the first  $n$  characters of a file.

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**Syllabus for B. Tech I Year I semester**  
**Information Technology**  
**ENGINEERING WORKSHOP – I**  
**(Common to all branches)**

**Code: 4B171**

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**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



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**Syllabus for B. Tech I Year I semester  
Information Technology  
IT WORKSHOP-I**

**Code: 4F172**

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**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 7:** Software and data, Components of Desktop, Working with windows

**Week 4:**

**Getting Started with Microsoft Windows 7:** 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).

**TEXT BOOK:**

1. "Comdex Information Technology Course Kit" by Vikas Gupta, Dreamtech Press

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**Syllabus for B. Tech I Year I semester**  
**Information Technology**  
**TECHNICAL PAPER WRITING AND SEMINAR- I**

**Code: 4F189**

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**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 First Year First Semester. The evaluation is purely internal and will be conducted as follows:

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

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**Syllabus for B. Tech I Year II semester**  
**Information Technology**  
**ENGLISH – II**

**Code: 4H202**

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**UNIT 1: Short Story**

Lesson: ***A Short Story of an Indian Engineer / A Talent, Undone*** by Bhargav Prasanna

Grammar: Active and Passive Voice

Vocabulary: Words and Phrases from the text

Writing: Paragraph Writing (*Guided and Free*)

Speaking: Narration of Places of Interest (*India and Overseas*)

**UNIT 2: Speech**

Lesson: ***The Convocation Speech*** by Narayana Murthy

Vocabulary: Phrasal Verbs from the text

Grammar: Direct and Indirect Speech

Exercises related to speech

Writing: Précis Writing

Speaking: *Speaking on Current Affairs / Latest Technology*

**UNIT 3: Analysis of an Essay**

Lesson: ***The Secret of Work*** by Swami Vivekananda

Vocabulary: One Word Substitutes

Writing: Essay Writing

Speaking: Giving Instructions and Directions

**UNIT 4: Life History**

Lesson: ***Three Days to See*** by Hellen Keller

Concept and Elements of a Biography; Fiction and Non-Fiction; Ideas; Reminiscing

Writing: Critical Appreciation

Speaking: Speaking on past experiences and life's events

**UNIT 5: Advancement of Technology**

Lesson: ***The Cyber Age (Polymer Bank Notes)***

Question and Answers regarding a report / Testing on Mood, Tense and Voice

Vocabulary: Text Based Words / Meanings

Writing: Report on the economic status due to Credit/Debit Card

Speaking: Debate on conventional Currency and "plastic money"

*Prescribed Text: Compiled by Faculty - Department of English (SNIST)*

*Suggested Reading: Essential English Grammar by Raymond Murphy*

*Intermediate English Grammar by Raymond Murphy*

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**Syllabus for B. Tech I Year II semester (IT)**  
**ENGINEERING MATHEMATICS – II**  
 (Common to all branches except Bio-Technology)

**Code: 4H213**

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**UNIT-I**

**Matrices and Linear Systems:** Rank of a Matrix, Echelon Form, Normal Form, Inverse of a Matrix by Gauss-Jordan method, Linear Dependence and Independence of Vectors, Solution of Linear Systems –Gauss Elimination Method, Rank method. Iterative methods-Gauss Jordon and Gauss Seidal Methods.  
 Applications: Finding the current in electrical circuit.

**UNIT-II**

**Eigenvalues and Eigenvectors:** Eigenvalues and Eigenvectors- properties, Cayley-Hamilton Theorem (without proof) and its Applications to find higher power and inverse of a matrix, Diagonalization of a Matrix.

**UNIT-III**

**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. Classification of partial differential equations.  
 Applications: One dimensional Wave, Heat equations.

**UNIT-IV**

**Laplace Transformations:** Laplace transform of standard functions, shifting theorems, change of scale property, Multiplication by powers of t, Division by t, Laplace transform of unit step function, Impulse function and periodic functions. Inverse Laplace transforms: properties, partial fraction method and convolution theorem (without proof).  
 Applications: Laplace transforms to solve ordinary differential equations with constant coefficients.

**UNIT-V**

**Z- transforms:**

Z- Transforms and Inverse Z-transforms, properties, damping rule, Shifting properties, Initial and final value theorems, Convolution theorem.  
 Applications-Solution of difference equation by Z- transforms

**UNIT-VI**

**Fourier series:** Fourier coefficients, Fourier series to the functions of any period  $p=2L$ , Fourier series of even and odd functions, Half-range Expansions.  
 Applications: Fourier series to ordinary differential equations with boundary conditions.

**TEXT BOOKS:**

1. Mathematical Methods of Science and Engineering, Kanti B.Datta, CENGAGE Learning.
2. Higher Engineering Mathematics, B.S. Grewal, Khanna Publications, New Delhi.
3. Engineering Mathematics, B. V. Ramana, Tata McGraw Hill Publishing Company Ltd.
4. Erwin Kreyszig: Advanced Engineering Mathematics, John Wiley and Sons, 8<sup>th</sup> Edition.

**REFERENCE BOOKS:**

1. A Text Book of KREYSZIG's Engineering Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications.
2. Advanced Engg. Mathematics, S. R. K. Iyengar and R.K. Jain, Narosa Publishing House, London, 2002.

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**Syllabus for B. Tech I Year II semester**  
**Information Technology**  
**ENGINEERING PHYSICS – II**  
**(EEE, ECE, ECM, CSE, IT)**

Code: 4H222

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**UNIT-I**

**Semiconductor Physics:** Fermi Level in Intrinsic and Extrinsic Semiconductors, calculation of carrier concentration of Intrinsic and Extrinsic Semiconductors, Direct & Indirect Band Gap Semiconductors, **Thermistor, Hall Effect in semiconductors and applications.**

**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, Solar cell, applications.**

**UNIT-III**

**Dielectric Properties:** Electric Dipole, Dipole Moment, Dielectric Constant, Electric Susceptibility, Electronic and Ionic polarizabilities; Orientation Polarization(qualitative), Internal fields in Solids, Clausius-Mossotti equation, Frequency and temperature effect on Dielectrics(qualitative), **Piezo-electricity, Pyro-electricity and Ferro- electricity, Applications.**

**UNIT - IV**

**Magnetic Properties** Permeability, Field intensity, Magnetic Induction, Magnetization, Magnetic Susceptibility, Origin of Magnetic Moment, Bohr Magneton, Classification of Dia, Para and Ferro Magnetic Materials on the basis of Magnetic Moment, Domain Theory of Ferro Magnetism on the basis of Hysteresis Curve, Soft and Hard Magnetic Materials, Properties of Anti-Ferro and Ferri Magnetic Materials and their applications, Super conductivity, effect of Magnetic Field, Critical current density, Meissner's effect, Type-I & Type-II superconductors, Introduction to BCS theory of Superconductivity, **applications of super conductors.**

**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 and significance, 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, **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, Chemical Vapour Deposition; Top-down Fabrication: Thermal evaporation, Ball Milling, Characterization of Nano materials(XRD&TEM), carbon nanotubes, **Applications of Nano Materials.**

**Text Books:**

1. P K Palanisamy, Engineering Physics, Sitech Publications

**Reference Books: -**

1. Introduction to Solid 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. Engineering Physics P K Palanisamy
6. Nanotechnology: A Gentle Introduction To The Next Big Idea by M Ratner, D Ratner
7. Nano Materials by A K Bandyopadhyay
8. Applied Physics by P.K. Mittal
9. Modern Engineering Physics by S.Chandralingam, K.Vijay Kumar
10. Heat and Thermodynamics by Zemansky

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**Syllabus for B. Tech I Year II semester**  
**Information Technology**  
**DATA STRUCTURES AND C++**  
**(Common to all Branches)**

**Code: 4E201**

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**UNIT – I**

Introduction to data structures: Abstract data type (ADT), Stacks and Queues circular queues and their implementation with arrays.

Applications of Stack: 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, Advantages of Linked lists over Arrays, 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.

AVL trees, AVL tree operations: Insertion, deletion and searching.

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. Hash table representation, hash functions, double hashing.

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: single, multiple and multi level 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



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**Syllabus for B. Tech I Year II semester**  
**Information Technology**  
**ENGINEERING DRAWING – II**  
**(Common to all branches)**

**Code: 4B202** **L**    **T**    **P/D**    **C**  
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**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 2nd Edition [Basant Agrawal](#), [C. M. Agrawal](#), Tata McGraw-Hill Education

**REFERENCES:**

1. Engineering Drawing, K.Venugopal/G.Sreekanjana, New Age International Publishers.

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**Syllabus for B. Tech I Year II semester**  
**Information Technology**  
**ENGINEERING CHEMISTRY-II**  
**(Common to EEE, ME, ECE, CSE, IT and ECM)**

**Code: 4H232**

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**UNIT – I POLYMER TECHNOLOGY**

Polymer, polymerization - Types of Polymerization.

**Plastics** – thermosetting and thermoplastics, preparation, properties and **Engineering applications of the following: PVC, Teflon, Bakelite, Nylon 6,6 and epoxy resins.**

**Rubber** – natural and artificial rubber, vulcanization of natural rubber, **Buna-S, Buna-N and their Engineering applications.**

**Conducting polymers-** classification, preparation of **polyacetylene, polyaniline and their Engineering applications.**

**UNIT – II SURFACE CHEMISTRY AND COLLOIDS**

**Surface Chemistry:** Adsorption – Types of Adsorption, Isotherms Langmuir adsorption isotherm. **Engineering applications of adsorption.**

**Colloids:** Classification of colloids, Electrical and optical properties, micelles, gold number, Types of emulsions, preparation, Emulsifier, liquid in solids(gel), classification, preparation and properties **Engineering applications of colloids in industry.**

**UNIT – III FUEL TECHNOLOGY**

**Classification of Fuels-** Solid, Liquid & gaseous fuels. Characteristics of good fuel, calorific value (HCV&LCV). Determination of calorific value by Bomb & Junkers gas calorimeter. Solid Fuels:- Coal and its chemical composition, Analysis of Coal and their importance. Liquid fuels:-Source – Petroleum-refining of petroleum- Production of petrol by Bergius and Fischer tropesch's process:- **(the production of synthetic petrol)**. Gaseous Fuels:- Natural gas –Analysis of flue gas by Orsat's apparatus. **Engineering applications of fuels.**

**UNIT – IV EXPLOSIVES, PROPELLANTS AND LUBRICANTS**

**Explosives:** Classification, Precautions during Storage, blasting fuses, **important explosives and their Engineering applications.**

**Propellants:** Classification of Propellants, **Solid Rocket propellants and their engineering applications**

**Lubricants:**

Classification- Solid , Semi Solid, Liquid, emulsion- Properties- Selection of lubricants for different purposes. Lubrication: Mechanism of lubrication (fluid film, boundary and extreme pressure lubrication). Characteristics of Lubricants, Viscosity, viscosity index, Cloud and pour point, flash and fire point, mechanical strength.**Engineering applications of lubricants.**

## UNIT – V CHEMISTRY OF ENGINEERING MATERIALS

**Refractories** : Definition, Classification with examples, criteria of a good refractory material, Causes for the failure of a Refractory material. **Engineering applications of refractories.**

**Insulators:** Definition & Classification with examples, Characteristics of Insulating materials- Thermal insulators, Electrical insulators- Their Characteristics and **Engineering applications of electrical insulators.**

**Glass:-** Manufacture of glass –types of glasses-Soft glass- hard glass , **Applications of glass as an Engineering and Architectural material.**

**Ceramics** : Structural clay products, white wares and chemical stone wares. **Engineering applications of ceramics.**

## UNIT – VI GREEN CHEMISTRY

Introduction, Concepts, Principles of green chemistry, development of green chemistry, importance of measurement in green chemistry, Principles of green engineering.

**Engineering Applications of green chemistry:** Manufacture of polylactic acid for **plastic production,**

Production of **biodegradable polymer (poly hydroxyl alkanoates (PHA)).**

### Text Books:

1. 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 & Mukkanti, S. Chand & CO, New Delhi (2014).
3. Chemistry of Engineering Materials by C.V. Agarwal,C.P.Murthy,A.Naidu; BS publications.
4. Sharma, R.K.; Sidhwani,I.T. & Chaudhari, M.K. *Green Chemistry Experiments: A Monograph*, I.K. International Publishing Hopuse pvt Ltd. New Delhi, Bangalore(2013).
5. Text Book of Nano Science and Nano Technology by B.S. Murthy and P.Shankar, University press.

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**Syllabus for B. Tech I Year II semester**  
**Information Technology**  
**BASIC MECHANICAL ENGINEERING**  
(Common to All Branches Except Mechanical Engineering)

**Code: 4BC04**

**L T P/D C**  
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*After completing the subject, students will be able:*

- *State First law and Second law of thermodynamics and differentiate between S.I. & C.I engines and differentiate between 4-stroke 2&-stroke engines*
- *Classify different types of Boilers and differentiate impulse turbine and reaction turbine and understand their working principle*
- *Understand the working principle of vapour compression and vapour absorption Refrigeration systems reciprocating and centrifugal pumps and classify different types of Hydraulic turbines*
- *Understand the working principles of different types of welding and casting methods*
- *Understand the cold and hot working processes and sheet metal operations*
- *Understand the principle of operation of different machine tools like lathe, grinding, milling and shaping machines.*

**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.

**Internal combustion engines:** Internal combustion engines, definition, classification, components, working of two-stroke, four stroke cycle engines, SI and CI Engines, Performance parameters, Need for cooling, and lubrication of IC engines.

**UNIT-II**

- a) **Steam Power plant, Boiler, Steam Turbines:** Layout of steam power plant, Water tube and Fire tube Boilers :- "Cochron", Babcock and Wilcox Boiler and High Pressure Boilers. (Benson & La-mount only).
- b) **Steam turbines:- Impulse & Reaction Turbines**
- c) **Gas turbine-power plants :- Closed & Open cycle types**

**UNIT- III**

- a) **Hydraulic pumps & turbines:-** Centrifugal Pumps, Pelton wheel, Francis turbine and Kaplan Turbine -- Layout of Hydro electric power plant
- b) **Refrigeration & Air conditioning systems:-** Description of Vapour Compression and Vapour Absorption systems

#### **UNIT-IV**

##### **Manufacturing Processes:**

**Foundry Practice:-** Patterns, Moulding and Moulding materials, casting methods-Sand Casting, Shell mould Casting, Investment Casting, Die Casting ,Centrifugal casting – Principle and Application of these processes

**Welding:-** Types of Welding- Electric Arc welding - Coated electrode, TIG welding & MIG welding, Gas welding and cutting, Resistance welding- Spot welding, Soldering and Brazing .

#### **UNIT-V**

**Mechanical working :-** Hot and Cold working, Rolling- Rolling products, Types of Rolling mills, Forging-operations, forging methods, Extrusion-methods, Metal Spinning and Wire Drawing

**Press working operations:-**Cutting, Bending, Drawing and Squeezing

#### **UNIT-VI**

**Machine tools:** Construction of lathe, shaper, drilling, milling, grinding and CNC machine tools-Advantages, Machine controls, vertical & horizontal spindles.

#### **TEXT BOOKS :**

Mathur, M.L., Mehta, F.S. and Tiwari, R.P., Elements of Mechanical Engineering, Jain Brothers, New Delhi, 2005.

R.K. Rajput, "Elements of Mechanical Engineering", Laxmi Publications, 1994.

#### **REFERENCES:**

P.N.Gupta, M.P. Poonia, "Elements of Mechanical Engineering", Standard Publishers Distributors Nai Sarak, Delhi.

R.C.Gupta, "Mechanical Engineering", Khanna Publishers, Delhi.

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**Syllabus for B. Tech I Year II semester  
Information Technology  
ENGLISH LANGUAGE LAB-II**

**Code: 4H272**

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**Lab Activities:**

1. Reading Comprehension / Vocabulary Activities
2. Reading Comprehension / Vocabulary Activities
3. Reading Comprehension / Vocabulary Activities
4. Reading Comprehension / Vocabulary Activities
5. Reading Comprehension / Grammar
6. Reading Comprehension / Grammar
7. Reading Comprehension / Grammar
8. Reading Comprehension / Grammar

**Communication Skills:**

1. Speaking Activity: Agreement and Disagreement
2. Speaking Activity: Hobbies / Books
3. Speaking Activity: Hobbies / Movies / Travel
4. Speaking Activity: Picture Perception
5. Speaking Activity: Picture Perception
6. Speaking Activity: Extemporaneous
7. Speaking Activity: Debate

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**Syllabus for B. Tech I Year II semester - Information Technology**  
**DATA STRUCTURES AND C++ LAB**  
**(Common to all Branches)**

**Code: 4E271**

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**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.

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**Syllabus for B. Tech I Year I semester**  
**Information Technology**  
**ENGINEERING PHYSICS LAB – II**  
 (Common to all branches)

**Code: 4H282**

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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 and Bending losses of an optical fiber
5. Diffraction Grating.
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
10. Dispersive power of Prism

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

**Prescribed Practical Book by Dr. Y. Aparna, Professor & HOD of Physics Department, JNTUH**



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**Syllabus for B. Tech I Year II semester  
Information Technology  
IT WORKSHOP-II**

**Code: 4F273**

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**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:**

1. Complete Reference Microsoft Office 2007
2. <https://office.microsoft.com/en-us/support/> (office help and how-to)
3. W3schools.com

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**Syllabus for B. Tech I Year II semester**  
**Information Technology**  
**TECHNICAL PAPER WRITING AND SEMINAR- II**

**Code: 4F190**

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**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 First 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

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**Syllabus for B. Tech. II Year I semester**  
**Information Technology**  
**ENGINEERING MATHEMATICS – III**  
 (Common to all branches except Bio-Tech)

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**Code: 4H315****UNIT-I**

**Special Functions:** Beta, Gamma Functions –Properties, Relation between Beta and Gamma functions.  
 Applications: Evaluation of improper integrals.

**UNIT-II**

**Complex Analysis:** Limits, continuity and differentiation, Analytic functions, Cauchy-Riemann equations, Complex integration, Cauchy's integral theorem (without proof), Cauchy's integral formula. Taylor's and Laurent's series, Singularities and zeros, Cauchy's Residue Theorem (without proof).  
 Applications: Evaluation of real integrals using Cauchy residue theorem.

**UNIT-III****Fourier Transform:**

Fourier transform of a function, Sine and Cosine transformations, Finite fourier transform, Parseval's identity.  
 Application : Solution of differential equations using Fourier transform.

**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.

**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 Methods- Milne's method, Adams-Bashforth method.

**TEXT BOOKS:**

1. Mathematical Methods of Science and Engineering, Kanti B.Datta, CENGAGE Learning.
2. Higher Engineering Mathematics, B.S. Grewal, Khanna Publications, New Delhi.
3. Engineering Mathematics, B. V. Ramana, Tata McGraw Hill Publishing Company Ltd.
4. Erwyn Kreyszig: Advanced Engineering Mathematics, John Wiley and Sons, 8<sup>th</sup> Edition.

**REFERENCE BOOKS:**

1. A Text Book of KREYSZIG's Engineering Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications.
2. Advanced Engg. Mathematics, S. R. K. Iyengar and R.K. Jain, Narosa Publishing House, London, 2002

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**Syllabus for B. Tech. II Year I semester**  
**Information Technology**  
**SWITCHING THEORY AND LOGIC DESIGN**  
**(Common to ECE, ECM&EEE)**

Code: 4CC02

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After studying this course, the students will be able to

1. Understand the rules of Boolean algebra and use it to simplify Boolean expressions.
2. Understand simplification of Boolean expressions using K-map.
3. Understand operations of combinational circuits such as full adders, multiplexers, decoders, encoders, code converters.
4. Understand the operation of sequential circuits such as flip-flops
5. Understand the operation of counters and registers. Able to design them.
6. Understand the structure of PLD's such as ROM's, PLA's, PAL's. Understand the basic concepts of State Machine Charts and models.

**UNIT – I**

**Number System:** binary, decimal, octal, hexa decimal, weighted and un-weighted codes.

**Boolean Algebra:** Axiomatic definition of Boolean algebra, Binary operators, postulates of and theorems.

Boolean addition, subtraction, 1's complement, 2's complement. Switching functions, Canonical forms and Standard forms, Simplification of switching functions using theorems.

**UNIT – II**

**Logic gates:** Basic gates and universal gates.

**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**

**Sequential Circuits 1:** Classification of sequential circuits (Synchronous, Asynchronous Pulse mode, and Level mode with examples). Basic flip-flops-Triggering and excitation tables. Conversions of flip flops.

## **UNIT - V**

### **Sequential Circuits 2:**

The sequential circuit model. Asynchronous counters, Design of simple synchronous sequential circuits such as counters. Design of modulo-N counter, Ring counter, twisted ring counter. Shift registers

## **UNIT - VI**

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

### **Algorithmic State Machines:**

State machines and state diagrams. Examples of weighing machine and Binary multiplier.

### **Text Books:**

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

### **References:**

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

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**Syllabus for B. Tech. II Year I semester**  
**Information Technology**  
**ELECTRONIC DEVICES AND CIRCUITS**  
**(Common to ECE, ECM&EEE)**

**Code: 4CC01**

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After studying this course, the students will be able to

1. Understand the Principle of operation and applications of CRO.
2. Understand the operation of diode and its application as rectifier.
3. Understand the Fundamentals of BJT operation, Characteristics and different biasing circuits.
4. Understand the Fundamentals of JFET operation, Characteristics and importance of MOSFETs.
5. Understand the Small signal Model of BJT and Amplifier Analysis under CB, CE and CC configurations.
6. Understand the Basic regulator circuits and voltage multipliers.

**UNIT-I**

**ELECTRON DYNAMICS AND CRO:** Motion of charged particles in electric and magnetic fields. Simple problems based on electric and magnetic fields. Electrostatic and magnetic focusing. Principle of CRT. Deflection Sensitivity (Electrostatic and Magnetic deflection). Parallel Electric and Magnetic fields.

**UNIT- II**

**PN JUNCTION DIODE:** P-N junction diode under forward & reverse bias. Transition capacitance and Diffusion capacitance. Break down of junctions (Avalanche and Zener Break down). Zener Diode Characteristics. Applications: Half wave Rectifier, Full wave Rectifier, Bridge Rectifier: Analysis.

**UNIT-III**

**BIPOLAR JUNCTION TRANSISTOR:** Fundamentals of BJT & Operation, Minority carrier profiles. I/P and O/P Characteristics CB, CE and CC configurations. Switching characteristics (Rise time, Fall time, Delay Time and Storage time). Biasing Methods & Stabilization Fixed Bias, Collector to Base Bias, Voltage Divider Bias and Problems, Thermal runaway in BJTs.

**UNIT-IV**

**FIELD EFFECT TRANSISTOR:** Working of JFET, JFET characteristics, Drain current equation, FET Parameters, Small signal model of JFET. Construction and characteristics of MOSFET (Enhancement and depletion mode); Comparison of JFET & MOSFET. SCR: Two transistor Analogy and Characteristics, UJT: Operation and Characteristics.

**UNIT- V**

**TRANSISTOR AMPLIFIERS:** Small signal Model of BJT, h-parameter representation- Determination of voltage gain, current gain, input impedance, output impedance. CE Amplifier-its Analysis, Frequency Response. Problems. RC coupled amplifier: Analysis. Approximate analysis of CB and CC Amplifiers.

## **UNIT-VI**

**VOLTAGE REGULATORS:** Terminology, Basic regulator circuit: Zener, Transistor Based: Shunt and Series Voltage regulators. Protection Circuits: Current limiting, Short circuit protection. Specifications of Voltage regulator, Voltage multipliers.

### **Text Books**

1. Electronic Devices and Circuits-J.Millman, C.C.Halkias and satyabratha jit Tata Mc Graw Hill, 2 Ed. 2007
2. Electronic Devices AND Circuits-R.L.Boylestad & Louis Nashelsky, Pearson/Prentice Hall, 9th edition, 2006.

### **References:**

1. Integrated Electronics- J.Millman, C.C.Halkias, 1991 ed., 2008, TMH.
2. Electronic Devices and Circuits – K.LalKishore, 2 ed., 2005, BSP
3. Electronic Devices and Circuits by Sanjeev Guptha, Dhapat Rai Publications.
4. Electronic Devices and Circuits by S.Salivahanan and N.Suresh Kumar, Tata Mc Graw Hill Publications

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**Syllabus for B. Tech. II Year I semester  
Information Technology  
OBJECT ORIENTED PROGRAMMING THROUGH JAVA  
(COMMON TO CSE, IT & ECM)**

**Code: 4EC03**

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**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.

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.

Applications using interface

Applications using packages

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 vi) Understand how to implement multiple inheritance in java vii) Explain the difference between classes and interfaces viii) Create and import packages ix) Understand different streams

**UNIT-III**

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

Introduction to I/O programming: DataInputStream, DataOutputStream, FileInputStream, FileOutputStream, BufferedReader.

Collections: interfaces, Implementation classes, and Algorithms (such as sorting and searching).

**Objective:**

On the completion of the unit, a student should be able to: i) Understand uses of packages and Collections ii) To study and implement various classes and interfaces of Java Collections Framework.



#### **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.

Applications of multithreading.

#### **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, Introduction to Swings, Swings Elements:- JComponent, JFrame, user interface components- JLabels, JButton, JScrollbar, text components, check box, check box groups, choices, lists panels – scrollpane, menubar, graphics, layout, managers –boarder, grid, flow, card and grid bag.

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

Applications: developing calculator, developing feedback form, developing bio data.

#### **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 iv) Use Swings elements in programs

#### **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.

Applications: Developing of simple advertisements.

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

**Applications:** One to one Chat application

#### **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 Edn.

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**Syllabus for B. Tech. II Year I semester**  
**Information Technology**  
**MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE**

Code: 4F302

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**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)

**Engineering Applications:**

1. It is used to design digital circuits. For example, used in aircrafts by pilots

**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)

**Engineering Applications:**

1. Used for Systematic Inferencing (finding the correctness of result) and Knowledge Representation ( in the area of Artificial Intelligence systems )
2. In digital signal processing, recurrence relations can model feedback in a system, where outputs at one time become inputs for future time. They thus arise in infinite impulse response (IIR) digital filters.

**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)

**Engineering Applications:**

1. Lattices have been used to design a wide range of cryptographic primitives, including public key encryption, digital signatures, encryption resistant to **key leakage** attacks, **identity based** encryption
2. Designing circuits such as Two-Floor Elevator, Coffee, Tea, or Milk machine.

**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)

**Engineering Applications:**

1. Used in the theory of sequential machines, formal languages, and in certain applications relating to computer arithmetic such as multiplication(sequential logic-state machines)-semigroup
2. Most particularly used in the area of syntactic analysis and formal languages(monoid)
3. The application of group theory is important in the design of fast adders and error-correcting codes(Groups)

**Unit – V:**

**Graphs** – Basic concepts, Isomorphisms and subgraphs, Trees and their properties, Spanning trees, Directed trees, Binary trees.  
(Pages 437 – 522 of Textbook 2)

**Engineering Applications:**

1. Used for finding communities in networks, where we want to detect hierarchies of substructures, for ranking (ordering) hyperlinks and used by our GPS to find the shortest path home.

**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.

**Engineering Applications:**

1. Used in VLSI design, circuit needs to be on surface: lesser the crossings, better is the design.
2. Used for Highspeed Highways/Railroads design since crossings are always Problematic.
3. Used for map coloring and exam scheduling.

**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:**

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

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**Syllabus for B. Tech. II Year I semester**  
**Information Technology**  
**BASIC ELECTRICAL ENGINEERING**  
**(Common to MECH, CSE, IT & BT)**

Code: 4AC41

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

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 transformations, mesh and nodal analysis. Network theorems – superposition, thevenin's theorem & maximum power transfer theorem, simple problems.

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

Principle of AC voltage, wave forms & basic definitions. R.M.S. and Average values of alternating currents and voltage, Form factor and Peak factor, Phasor representation of alternating quantities, the 'j' operator and phasor algebra, Analysis of ac circuits with single basic network elements, Single phase series circuits.

Faraday's laws of electro-magnetic induction, concept of self and mutual inductances.

**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: Single Phase 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.

**Unit – V: Three phase circuits and 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 Engg. –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 & I.J.Nagrath PHI.
2. Principles of Electrical Engineering - V.K.Mehta, S.Chand Publications.2<sup>nd</sup> edition.

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Syllabus for B. Tech. II Year II semester  
Information Technology

## FUNCTIONAL COMMUNICATIVE WRITTEN ENGLISH (FCWE)

Code: 4HC73

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### UNIT 1: Speed Reading Strategies

- Vocabulary skills:** Word recognition, guessing the meaning from the context, analysis of word structure (prefix – suffix)
- Prediction Techniques:** Index, headings, sub-headings, nonverbal context and linguistic clues
- Scanning skills:** Speed Reading, Regional practice
- Skimming Skills** for identifying the central idea and recognizing the main ideas
- Identifying** the writing pattern of the passage/text
- Intensive reading:** Identifying difference between facts/opinions and drawing inferences and conclusions

### UNIT 2: Group Discussions

- Definitions:** Difference between a Group Discussion and Debate
- Purpose of Group Discussion:** Problem Solving, Decision Making and Personality Assessment
- Features / Characteristics** of successful Group Discussion: Agreement on Group Goals, Goal Oriented, Interactive Agreement for procedures, cooperative and friendly atmosphere
- Evaluation method** in Group Discussion for selection: Subject knowledge, oral communication skills, leadership skills and team management
- Group Discussion strategies:** Appropriate strategy for effective participation in Group Discussion, contributing systematically, creating a friendly and cooperative atmosphere, moving the discussion along, promoting optimal participation, handling conflict and effective closure
- Techniques for Individual contribution:** Topic analysis, Discussing opinions, problems, case studies

### UNIT 3: Nature of Technical Communication

- Definition of Communication
- Stages of Communication; Channels of Communication; Nature of Technical Communication
- Aspects of Technical Competence – *Subject, Linguistic, Organizational Competence*
- Features of Technical Competence – Audience, Objective Language, Format Style and Visual Aids
- Difference between General Communication and Technical Communication
- Need and Importance of Technical Communication; Types of Technical Communications
- Technical Communication Skills:
  - Listening** - General, Academic and Professional
  - Speaking** - Asking and Answering Questions, Experiencing Opinion and Comments, Academic and Professional oral Interaction, Academic and Professional Discussions
  - Reading** – General, Academic, Professional
  - Writing** - General, Academic, Professional
- Barriers to Effective Communication: Improper encoding, Bypassing, Frame of Reference, Physical Distractions, Psychological and Emotional Interference and Intercultural differences

**UNIT 4: Presentation Skills**

- a. Nature and importance of Oral Presentation
- b. Planning the presentation
- c. Define the purpose
- d. Analysis the Audience and Occasion
- e. Choose a suitable Title/Topic.
- f. Preparing the Presentation: Develop the central idea, main ideas, supporting material, plan and prepare visual aids
- g. Presentation: Introduction, Body and Conclusion
- h. Rehearsing and Presentation: Vocal aspects, body language, Time management, Handling questions, meeting unexpected situations
- i. Handling Stage Fright
- j. DOs and DON'Ts of Presentations

**UNIT 5: Writing Strategies**

- a. Pre-writing; Writing; Re-writing
- b. Letter Writing - Formal and Informal Letter Writing; Inquiry Letters, Replies to Letters of urging action, Complaint, Bank and Insurance, Business and Industrial Sales, Correspondence, Social Correspondence
- c. E – Correspondence: Purpose, Structure, Layout and Form, Tone, Types,
- d. E-mails: Principles and Fundamentals
- e. E-mail Messages: Advantages of E-mail
- f. Characteristics of successful E-messages
- g. Formatting E-mail messages
- h. Standard E-mail practices
- i. E-mail writing strategies
- j. DOs and DON'Ts in E-Correspondence
- k. Nature and Significance of Report Writing
- l. Types of Reports: Informational and Analytical Reports, Routine and Special Reports, Oral and Written Reports, Formal and Informal Reports
- m. Formats of Reports: Printed, Letter, Memo, Manuscript
- n. Structure of Formal Reports
- o. Writing Strategies: Preparation steps to write a Report

**Suggested Books:**

1. Technical communication- Meenakshi Raman and Sangeetha Sharma (Oxford Publications)
2. Effective Technical Communication – Ashraf Rizwi
3. Developing Communication Skills – Krishna Mohan and Meera Benarjee
4. SOFT SKILLS – Dr. K. Alex, S.Chand publications
5. Advanced Technical communication - Kavita Tyagi and Padma Mistri

**Syllabus for B. Tech. II Year I semester  
Information Technology  
BASIC ELECTRICAL ENGINEERING LAB  
(Common to MECH, CSE, IT & BT)**

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**Code: 4AC91**

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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.



**Syllabus for B. Tech. II Year I semester  
Information Technology  
BASIC ELECTRONICS LAB  
(Common to CSE & IT)**

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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  
Information Technology  
**OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB**  
(Common to CSE, IT, ECM, MECH)

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**Code: 4EC74**

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**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 Execute Account 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

Get Account No() and set Account No (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 we 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)

- A) Write a program to check whether the given string is palindrome or not.
- B) Write a program for sorting a given list of names in ascending order.
- C) Write a program to count the no. of words in a given text.

6)

- A) 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

- B) 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 Execute Package with main method using the above packages(classes and its methods).

Use ArrayList class of Collections Framework to and use algorithms to search and sort the elemnt of an array.

- 7) Modify the withdraw() method of Account class such that this method should throw “Insufficient Fund Exception” 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)

- A) Define two threads such that one thread should print even numbers and another thread should print odd numbers.
- B) Modify the Account class to implement thread synchronization concept.
- C) 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).
- D) 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

|  |  |
|--|--|
|  |  |
|  |  |
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|  |  |

|     |          |
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| ADD | SUBTRACT |
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- 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.

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**Syllabus for B. Tech. II Year I semester**  
**Information Technology**  
**TECHNICAL PAPER WRITING AND SEMINAR- III**

**Code: 4F391**

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**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 Second Year First Semester. The evaluation is purely internal and will be conducted as follows:

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

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**Syllabus for B. Tech. II Year II semester**  
**Information Technology**  
**COMPUTER ORGANIZATION**  
 (Common to ECM, ECE, EEE & IT)

**L T P/D C**  
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**Code: 4DC03**

**UNIT - I**

**Basic Structure of Computers:** Computer Types, Functional unit, Basic operational concepts, Bus structures, Software, Performance, multiprocessors and multi computers. Data Representation. Fixed Point Representation. Floating – Point Representation. Error Detection codes.

**UNIT - II**

**Register Transfer Language and Micro-operations:** Register Transfer language. Arithmetic Micro-operations, logic micro-operations, shift micro operations, Arithmetic logic shift unit. Instruction codes. Computer Registers; Computer instructions – Instruction cycle. memory – Reference Instructions. Input – Output and Interrupt; STACK organization; Instruction formats; Addressing modes: Data Transfer and manipulation, Program control.

**UNIT - III**

**Control Unit Design:** Control memory, Address sequencing, micro-program example, design of control unit, Hard wired control, Micro-programmed control.

**Pipelining:** Parallel processing, pipelining, arithmetic Pipeline, Instruction pipeline, RISC Pipeline.

**UNIT - IV**

**Computer Arithmetic & Logic Operations :** Addition and subtraction, multiplication Algorithms, Division Algorithms, Fixed & Floating – point Arithmetic operations, AND, OR, NOT & XOR operations.

**UNIT - V**

**The Memory System :** Basic concepts semiconductor RAM memories. Read-only memories Cache memories performance considerations, Virtual memories secondary storage. Memory management and MMU.

**UNIT - VI**

**Input-Output Organization :** Peripheral Device, Input-Output Interface, Asynchronous data transfer Modes of Transfer, Priority Interrupt, Direct memory Access, Input-Output processor (IOP), Serial communication; Introduction to Peripheral Component Interconnect (PCI) bus. Introduction to standard serial communication protocols like RS232, USB, IEEE1394.

**TEXT BOOKS :**

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

**REFERENCES :**

1. Computer Architecture a quantitative approach–Henessey, Patterson, Fourth Edition, Elsevier.
2. Computer Architecture: Fundamentals and principles of Computer Design, Joseph D. Dumas II, BS Publication.

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**Syllabus for B. Tech. II Year II semester**  
**Information Technology**  
**PROBABILITY AND STATISTICS**  
(Common to All Branches)

**Code: 4HC16**

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**UNIT-I**

**Probability:**

Introduction, Sample Space and Events – Counting, Probability, The Axioms of probability, Addition theorem, Conditional, Multiplication theorem, Theorem of Total Probability, Baye’s Theorem.

**UNIT-II**

**Probability Distributions:**

Random variable – Discrete and Continuous, Distribution functions of probability- mass and density, Expectation, Probability distributions - Binomial, Poisson and Gaussian (Normal) distribution– Related properties.

**UNIT-III**

**Sampling Distributions:**

Populations and samples, Sampling distribution of the Mean (known ) and The sampling distribution of the mean (unknown), proportions, sums and differences. Central limit theorem and its applications. Estimation-Point Estimation, Interval Estimation, Bayesian Estimation.

**UNIT -IV**

**Inferences Concerning Means and Proportions:**

Tests of Hypothesis, Type-I and Type-II Errors, Hypothesis testing concerning to One mean and two means of large and small size samples. Test of Hypothesis Concerning to Proportions.

**UNIT-V**

**Test of significance:** Student t-test, F-test,  $\chi^2$  test- Goodness of fit, Independence of Attributes.

**UNIT-VI**

**Quality Control:**

Control Charts for Measurements, Control Charts for Attributes, Tolerance Limits, Acceptance Sampling.

**Text Books:**

1. Probability and Statistics for Engineers: Miller and John E. Freund, PHI Publishers, 9<sup>th</sup> Edition.
2. Probability and Statistics, V.Srinivas and R.Umamaheshwar Rao, Paramount Publishing House.

**REFERENCE BOOKS:**

1. Fundamentals of Mathematical Statistics: Gupta and Kapoor – S. Chand and Co.
2. Engineering Mathematics, B. V. Ramana, Tata McGraw Hill Publishing Company Ltd

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**Syllabus for B. Tech. II Year II semester**  
**Information Technology**  
**DATA BASE MANAGEMENT SYSTEMS**

**Code: 4FC03**

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**UNIT I :Data Base Systems:**

Data Vs Information, 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 – Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model –Data Modeling checklist.

Application- ER diagram for a tiny college

**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.

Application-Student database design.

**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, Embedded SQL.

Application-working with Aviation company database.

**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.



Application-Faculty Evaluation Report.

**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,

Application-Production Management System.

**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, Query Optimization techniques.

Application – Creating B+ tree on Instructor File.

**TEXT BOOKS :**

1. Data base System Concepts, Silberschatz, Korth, McGraw hill, V edition.
2. Data base Mgt. Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGrawHill 3rd Edition
3. Database Management Systems, Peter Rob, A.Ananda Rao,Carlos Coronel ,CENGAGE Learning

**REFERENCES :**

1. Data base Systems design, Implementation, and Mgt., 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

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**Syllabus for B. Tech. II Year II semester  
Information Technology  
DATA COMMUNICATIONS**

**Code : 4C432**

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**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.

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**Syllabus for B. Tech. II Year II semester**  
**Information Technology**  
**DESIGN AND ANALYSIS OF ALGORITHMS**

**Code: 4FC04**

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**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.

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Syllabus for B. Tech. II Year II semester  
Information Technology

## **SHELL PROGRAMMING & SCRIPTING LANGUAGES**

**Code: 4FC07**

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### **Unit I:**

Introduction to Unix:- Architecture of Unix, Features of Unix , Unix utilities – processs utilitites, 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.

### **UnitVI:**

**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. 2nd Edition.
2. Programming in Python , Mark Lutz, Oreilly publications
3. Dive into python by Mark Pilgrim.

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Syllabus for B. Tech. II Year II semester  
Information Technology  
**EFFECTIVE ENGLISH COMMUNICATION AND SOFT SKILLS  
(EECSS)**

**Code: 4HC74**

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**UNIT 1: The Art Of Communication**

Introduction: Analytical Communication for leaders

1. Non-verbal Communication
  - a. Body Language
  - b. Listening
  - c. Writing
2. Oral Communication (Speaking)

***8 detrimental facts to Communication:***

1. At peace with self
2. Awareness
3. Transparency (Being yourself)
4. Helping Hand
5. Realistic Response (Unemotional)
6. Resolving Misunderstandings
7. Overcoming Fear
8. Blamelessness

**UNIT 2: Soft Skills**

1. What are Soft Skills?
2. Importance of Soft Skills
3. Attributes regarded as Soft Skills
4. Social Skills
5. Exhibiting; Identifying and Improving your Soft Skills
6. Top 60 soft skills
7. Practicing soft skills

**Attitude: "ATTITUDE IS EVERYTHING!"**

1. Meaning; Features of attitudes
2. Attitude and Behavior
3. Formation of attitudes
4. Change of Attitudes: How to change Attitude for the betterment?
5. Attitude in a workplace
6. The power of positive attitude - Developing positive attitude
7. Positive attitude and its benefits; Negative attitude and its results
8. Examples of negative attitudes
9. Overcoming negative attitude

Exercise 1: Measure your soft skills

Exercise 2: Measure your attitude

### **UNIT 3: Time Management; Goal Setting; Team Dynamics**

#### **Time management**

Introduction:

1. The 80:20 rule
2. Take a good look at the people around you
3. Examine your work
4. Sense of time management
5. Features of time; Three secrets of time management
6. Time management matrix: Analysis of time matrix; Effective scheduling; Grouping of activities
7. Five steps to successful time management
8. Difficulties in time management: Evils of not planning; Overcoming procrastination
9. Time management tips for students
10. Interesting facts about time
11. Ideal way of spending a day
12. Time wasters – Time savers

#### **Goal Setting**

Introduction:

1. The purpose of goal setting
2. Types of Goals
3. How to set goals
4. Qualities of effective goals: Steps toward setting effective goals
5. How to achieve goals-Reasons for not meeting the goals.

#### **Team Dynamics**

Introduction:

1. Meaning
2. Aspects of team building: Skills needed for teamwork
3. A model of team building: Team Vs Group
4. Characteristics of an effective team: Role of a team leader and team members
5. Inter-Group collaboration: Advantages of inter-group collaboration; Difficulties faced in inter-group collaboration; Factors shaping inter-group collaboration.

Exercise 1: Test your time management skills

Exercise 2: Test your goal setting

Exercise 3: Test your teamwork skills

### **UNIT 4: Etiquettes and Manners**

**Etiquette:** Introduction:

1. Modern etiquette
2. Benefits of etiquette
3. Classification of etiquette
4. Accompanying women
5. Taboo topics
6. Proposing the toast.

**Manners:** Introduction:

1. Why should you practice good manners?
2. Poor manners noticed in youth
3. Practicing good manners

4. Manners at the wheel : Driving and Manners in the flight
5. Respecting the sacred : Visiting holy places, Dealing with the challenged, Attending funeral
6. Professional manners: Social skills (manners), Getting along with people, Manners to get respect from others
7. Annoying office habits.

Exercise 1: Test your etiquette

Exercise 2: Test your manners

### **UNIT 5: Résumé writing and Interview skills**

**Résumé:** Introduction:

1. Types of Résumé
2. Difference among Bio-data, Curriculum Vitaé and Résumé
3. The terms: The purpose of Curriculum Vitaé writing
4. Types of Résumés
5. Tips to write Résumé: Curriculum Vitaé / Résumé preparation
6. The DOs and the DON'Ts of Résumé preparation
7. Resume check up
8. Design of a Curriculum Vitaé: Entry level Résumé, Content of the Résumé
9. References, Power words
10. Key skills that can be mentioned in the Résumé
11. Cover letter: Cover letter tips

**Interview skills:** Introduction:

1. Why an Interview?
2. Types of interviews (*Face to Face / Panel Interviews*, etc.)
3. Types of questions asked
4. Reasons for selecting a candidate / Reasons for rejecting a candidate
5. On the day of interview
6. Attending job fair
7. Common mistakes
8. What not to ask during an Interview
9. Dress code at an interview
10. FAQs
11. Quick / Basic Interview and job search related tips

Exercise 1: Write a resume

Exercise 2: Conduct Mock Interviews

*Books recommended:*

1. *Soft Skills - Dr.K.Alex, published by S.Chand*
2. *Technical communication- Meenakshi Raman and Sangeetha Sharma (Oxford Publications)*
3. *Effective Technical Communication – Ashraf Rizwi*



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**Syllabus for B. Tech. II Year II semester  
Information Technology  
COMPREHENSIVE VIVA VOCE - I**

**Code: 4F474**

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**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 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.

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**Syllabus for B. Tech. II Year II semester  
Information Technology  
DATABASE MANAGEMENT SYSTEMS LAB**

**Code: 4FC74**

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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 theclass.
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 Edn. 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.

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**Syllabus for B. Tech. II Year II semester**

**Information Technology**

**SHELL PROGRAMMING & SCRIPTING LANGUAGES LAB**

**Code: 4F479**

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- Write a shell script that accepts a filename, starting and ending line numbers as arguments and displays all the lines between the given line numbers.
- Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
- Write a shell script that displays all the files in the current directory to which the user has read, write and execute permissions.
- Write a shell script that receives any number of filenames as arguments, checks if every argument supplied is a file or a directory and reports accordingly. Whenever the argument is a file the number of lines on it is also reported.
- Write a shell script that accepts a list of filenames as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
- Write a shell script to list all of the directory files in a directory.
- Write a shell script to find factorial of a given integer.
- Write a shell script to find the G.C.D of two integers.
- Write a shell script to generate a multiplication table.
- Write a shell script that copies multiple files to a directory.
- Write a shell script (small calculator) that adds, subtracts, multiplies and divides the given two integers. There are two division options: one returns the quotient and the other returns remainder. The script requires 3 arguments: The operation to be used and two integer numbers. The options are add (-a), subtract (-s), multiply (-m), quotient (-c) and remainder (-r).
- Write a shell script to reverse the rows and columns of a matrix.
- Write a sed command that deletes the first character in each line in a file.
- Write sed command that deletes the character before the last character in each line a file.
- Write a sed command that swaps the first and second words in each line of a file.
- Write an awk script to count the number of lines in a file that do not contain vowels.
- Write an awk script to find the number of characters, words and lines in a file.
- Write an awk script that reads a file of which each line has 5 fields – ID, NAME, MARKS1, MARKS2, MARKS3 and finds out the average for each student. Print out the average marks with appropriate messages.
- ls -l command produces long listing of files. Write an awk script 1)to print the selected fields (Ex:size and name of the files) from the file listing. 2) to print the size of all files and number of files.
- Write a python program to find the given number is positive or not.
  - Write a python program to find roots for  $ax^2+bx+c=0$  using built-in functions.
  - Write a python program which opens a file and writes the content in the file.
- Write a python program to build a calculator using module based approach.  
Consider an arithmetic operation as a module.
- Write a Python code for simulating WAF (Web Application Framework)
- Write a Python code to demonstrate a personal information system.
- Write a Python application to demonstrate database Interface implementation on your own case study.

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**Syllabus for B. Tech. II Year II semester**  
**Information Technology**  
**TECHNICAL PAPER WRITING AND SEMINAR- IV**

**Code: 4F492**

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**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 Second 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