

**COURSE STRUCTURE
AND
DETAILED SYLLABUS**

for

B.Tech – I - IV Year

in

**ELECTRICAL AND ELECTRONICS ENGINEERING
(EEE)**

(Applicable from the Academic Year 2010-2011)



SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY

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

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

SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY (AUTONOMOUS)**B.Tech in Electrical & Electronics Engineering****COURSE STRUCTURE & SYLLABUS****I Year – I Semester**

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101EN01	English – I	3	---	---	3	30	70
2	101MA01	Engineering Mathematics –I	3	1	---	3	30	70
3	101PH01	Engineering Physics – I	3	1	---	3	30	70
4	101CH01	Engineering Chemistry	2	1	---	2	30	70
5	101IT01	Computer Programming	3	1	---	3	30	70
6	101ME01	Engineering Drawing - 1	2	---	4	4	30	70
7	101EN71	English Language Lab - I	---	---	2	1	25	50
8	101PH71	Engineering Physics Lab – I	---	---	3/2	1	25	50
9	101CH71	Engineering Chemistry Lab	---	---	3/2	1	25	50
10	101IT71	Computer Programming Lab	---	---	3	2	25	50
11	101ME71	Engineering Workshop -I	---	---	3/2	1	25	50
12	101IT72	IT Workshop – I	---	---	3/2	1	25	50
Total			16	4	15	25	330	720

I Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101EN02	English – II	2	---	---	2	30	70
2	101MA03	Engineering Mathematics – II	3	1	---	3	30	70
3	101PH02	Engineering Physics – II	3	1	---	3	30	70
4	101CS01	Data Structures and C ++	3	1	---	3	30	70
5	101ME02	Engineering Drawing – II	1	---	2	2	30	70
6	101EC05	Electronic Devices and Circuits	4	---	---	4	30	70
7	101EE01	Circuits & Networks - I	3	1	---	3	30	70
8	101EN72	English Language Lab - II	---	---	2	1	25	50
9	101CS71	Data Structures and C ++ Lab	---	---	3	2	25	50
10	101ME72	Engineering Workshop – II	---	---	3/2	1	25	50
11	101PH72	Engineering Physics Lab- II	---	---	3/2	1	25	50
Total			19	4	10	25	310	690

II Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101MA06	Mathematical methods	3	1	---	3	30	70
2	101EC06	Switching Theory and Logic Design	3	1	---	3	30	70
3	101BT37	Human values, Ethics and IPR	2	---	---	2	30	70
4	101EE02	Electro Magnetic Fields	3	1	---	3	30	70
5	101EE03	Electrical Machines – I	4	1	---	4	30	70
6	101EE04	Circuits & Networks – II	4	1	---	4	30	70
7	101EN73	Functional and Communicative Written English	---	---	2	2	25	50
8	101EC71	Electronic Devices & Circuits Lab	---	---	3	2	25	50
9	101EE71	Electrical Circuits & Simulation Lab	---	---	3	2	25	50
Total			19	5	8	25	255	570

II Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101CH03	Environmental Studies	3	1	---	3	30	70
2	101EE05	Electrical Machines – II	3	1	---	3	30	70
3	101EE06	Power System – I	3	1	---	3	30	70
4	101EE07	Control Systems	3	1	---	3	30	70
5	101EC33	Electronic Circuits	3	1	---	3	30	70
6	101ME04	Basic Mechanical Engineering	3	1	---	3	30	70
7	101EN74	Effective English Communication and Soft Skills	---	---	2	2	25	50
8	101EE72	Comprehensive Viva	---	---	---	1	---	50
9	101EE73	Electrical Machines Lab – I	---	---	3	2	25	50
10	101EC85	Electronic Circuits Lab	---	---	3	2	25	50
Total			18	6	8	25	255	620

III Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1		Open Elective – I	2	1	---	2	30	70
2	101EC13	Linear and Digital ICs	3	1	---	3	30	70
3	101EM03	Computer Organization	3	1	--	3	30	70
4	101EE08	Electrical Machines – III	3	1	--	3	30	70
5	101EE09	Power Electronics	3	1	--	3	30	70
6	101EE10	Power Systems – II	3	1	--	3	30	70
7	101MA71	Logical Reasoning – I	---	--	2	2	25	50
8	101EE74	Group Project	--	--	3	1	25	50
9	101EC73	Linear and Digital IC Applications Lab	--	--	3	2	25	50
10	101EE75	Control Systems Lab	--	--	3	2	25	50
Total			17	6	11	24	280	620

Open Elective – I

101FL01	Spanish
101FL02	French
101FL03	German

III Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101MB01	Managerial Economics and Financial Analysis	3	1	---	3	30	70
2	101EM05	Microprocessor & Microcontrollers	3	1	--	3	30	70
3		Open Elective – II	3	--	--	3	30	70
4	101EE11	Power Systems – III	4	---	---	4	30	70
5	101EE12	Measurements & Instrumentation	3	1	--	3	30	70
6	101EE13	Power Semi Conductor Drives	3	1	--	3	30	70
7	101MA72	Quantitative Aptitude	---	--	2	2	25	50
8	101EE76	Comprehensive Viva	--	--	--	1	--	50
9	101EE77	Electrical Machines Lab – II	--	--	3	2	25	50
10	101EE78	Power Electronics Lab	--	--	3	2	25	50
Total			19	4	8	26	255	620

Open Elective – II

101MB03	Banking, Insurance and Risk Management
101CS03	OOPS through Java
	One or two more electives shall be chosen based on skills in demand in the industry

***Industry Oriented Mini Project will be conducted by all students in summer vacation of III / IV B.Tech, II – Semester for a period of One Month. The report must be submitted in IV / IV B.Tech I –Semester and will have to be defended. Marks allotted are “75” and Two Credits are provided.

IV Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							INT	EXT
1	101MB02	Management Science	3	1	--	3	30	70
2	101EE14	Power Station Practice	3	1	--	3	30	70
3	101EE15	Non conventional Sources of Energy	4	--	--	4	30	70
4		Professional Elective – I	3	1	--	3	30	70
5		Professional Elective – II	3	1	--	3	30	70
6	101MA73	Logical Reasoning – II	--	--	2	2	25	50
7	101EE79	Pre Project Seminar	--	--	--	2	50	--
8	101EE80	Industry Oriented Mini Project	--	--	--	2	25	50
9	101EE81	Electrical workshop	--	--	3	2	25	50
10	101EM71	Microprocessor & Microcontrollers Lab	--	--	3	2	25	50
11	101EE82	Measurements & Instrumentation Lab	--	--	3	2	25	50
Total			16	4	11	28	325	600

Professional Elective – I

101EE16	Utilization of Electrical Energy
101EE17	High Voltage Engineering
101EC15	Digital Signal Processing

Profession Elective - II

101EE18	Optimization Techniques
101IT03	Data Base Management Systems
101IT10	Neural Networks & Fuzzy Logic

IV Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101EC34	Communication Theory	4	---	---	4	30	70
2		Professional Elective – III	4	---	---	4	30	70
3	101EE83	Project	---	---	---	10	50	150
4	101EE84	Comprehensive Viva	---	---	---	2	---	50
5	101EE85	Technical Seminar	---	---	---	2	25	---
Total			8	---	---	22	135	340

Professional Elective – III

101EE19	Flexible AC Transmission Systems
101EE20	Electrical Distribution Systems
101EE21	High Voltage DC Transmission

L - Lectures; **T** - Tutorial; **P/D** - Practical / Drawing; **C** - Credits

**Syllabus for B. Tech. I Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING**

**Code: 101EN01 ENGLISH – I (A Communicative Approach)
(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. **Writing** : Work-related correspondence
3. **Listening** : Listening for words
4. **Speaking** : Making requests
5. **Grammar** : Naming words specific (Part I)
6. **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
6. **Vocabulary** : Phrasal verbs

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
6. **Vocabulary** : Idioms

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.

REFERENCES:

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. Word power made easy – Norman Lewis, W.R.Goyal Publishers.
4. How to read better and faster: Norman Lewis, W.R.Goyal Publishers, New Delhi

**Syllabus for B. Tech. I Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING**

Code: 101MA01 ENGINEERING MATHEMATICS – I

(Common to all branches except Bio-Technology)

L	T	P/D	C
3	1	-	3

UNIT-I MATRIX THEORY-I:

Elementary row and column operations on a matrix, rank of a matrix, normal form, Inverse of a matrix using elementary operations, consistency and solutions of systems of linear equations using elementary operations.. Linear dependence and independence of vectors,

UNIT-II MATRIX THEORY-II :

Characteristic roots and vectors of a matrix, properties of Eigen values and Eigen Vectors, Caley-Hamilton theorem and its applications, reduction to diagonal form, quadratic and canonical forms.

UNIT-III SEQUENCES AND SERIES & MEAN VALUE THEOREMS:

Sequences and series- Convergence and divergence – Comparison test – integral test – Cauchy root test – Ratio test – Raabe’s test – Log test – Absolute and conditional convergence. Rolle’s Theorem, Mean value theorems (Without Proof) – Taylor’s and Maclaurin’s theorems with out remainders, expansions.

UNIT-IV FUNCTIONS OF SEVERAL VARIABLES & PARTIAL DIFFERENTIATION:

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

UNIT-V:

Radius of curvature Cartesian, Parametric and polar forms .Radius of curvature at origin., center of curvature, evolutes, envelopes.

UNIT-VI CURVE TRACING & MULTIPLE INTEGRALS :

curve tracing- Cartesian ,parametric and polar forms. Length of curves, Double and triple integrals, change of variables in double integrals.

TEXT BOOKS:

1. Higher Engineering Mathematics, B.S. Grewal , Khanna Publications, New Delhi.
2. Engineering Mathematics, B.V.Ramana, Tata McGraw Hill Publishing Company Ltd.

REFERENCES:

1. A text Book of KREYSZIG’s Engineering Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications
2. A Text book of Engineering Mathematics, M.Venkata Krishna, Jaico Publishing House,2010.
3. Jain, S.R.K, Advanced Engineering Mathematics, Narosa Publishing House, London 2002.

**Syllabus for B. Tech. I Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING**

Code: 101PH01 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, Diamond and hcp Structures, Structures of NaCl, ZnS, CsCl.

UNIT-II -X-RAY DIFFRACTION:

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

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

UNIT- III - ELEMENTS OF STATISTICAL MECHANICS:

Phase space, Ensemble, Difference between micro, canonical & grand canonical ensemble, Maxwell - Boltzman Statistics, Bose – Einstein Statistics, Fermi – Dirac Statistics with derivations.

UNIT-IV - 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-V- 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-VI - BAND THEORY OF SOLIDS:

Bloch Theorem, Kronig-Penny Model (Qualitative Treatment), Origin of Energy Band Formation in Solids, Classification of Materials into Conductors, Semi Conductors & Insulators.

TEXT BOOKS:

1. Introduction to Solid State Physics, by Charles Kittel, John Willey Publishers
2. Engineering Physics by P K Palanisamy, PSITECH Publications.

REFERENCES:

1. Solid State Physics Neil by W. Ashcroft , N. David Mermin, Cengage Learning
2. Statistical Mechanics by Donald Allan McQuarrie, University Science Book
3. Statistical Mechanics by Sathya Prakash, Pragatj Prakashan Publications
4. Quantum Mechanics by John L Powel, Narosa Publications
5. Principles of quantum Mechanics by Ramamurti Shanker, Springer
6. Applied Physics by M Chandrashekar and P Appala Naidu, V.G.S.Books Links
7. Modern Engineering Physics by K. Vijaya Kumar, S Chandralingam, S.Chand & Co, New Delhi

**Syllabus for B. Tech. I Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING**

**Code: 101CH01 ENGINEERING CHEMISTRY
(Common to all Branches Except Bio-Tech)**

L	T	P/D	C
2	1	-	2

UNIT-I - WATER TECHNOLOGY:

Hardness-temporary and permanent hardness. Units and inter conversions of Units. Estimation of Hardness; EDTA method Analysis of water – Alkalinity. Water Treatment: Internal treatment, External treatment – Lime – Soda Process, Zeolite Process, Ion-Exchange Process – Numerical Problems Lime – Soda Process.

UNIT II – ELECTROCHEMISTRY:

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

Batteries: 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 III - CORROSION AND ITS CONTROL:

Definition of corrosion, oxidation corrosion, mechanism of oxidation corrosion, electrochemical corrosion, mechanism of electrochemical corrosion, formation of anodic and cathodic areas, galvanic corrosion, waterline corrosion, soil corrosion, Factors affecting rate of corrosion control. Cathodic protection: Sacrificial anodic protection method, impressed current protection method, Protective coatings-metallic coatings, electroplating, Organic surface coatings – paints constituents and functions.

UNIT-IV - PHASE RULE AND ADSORPTION:

Phase rule- Definition and terminology, Application of phase rule to Water system and Ag-Pb system. Adsorption: Definition, types, Adsorption of gases on solids, Langmuir adsorption isotherm, BET adsorption equilibrium.

UNIT – V- 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, Polyester and Dacron.

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

Conducting Polymers: Poly acetylene, polyaniline and their applications.

UNIT-VI- FUELS AND LUBRICANTS:

Fuels: Classification- Characteristics of a good fuel, **Calorific value:** gross calorific value, net calorific value, determination of calorific values by bomb calorimeter.

Solid fuels: Coal, analysis of coal - proximate analysis and ultimate analysis

Liquid fuels: Petroleum –Refining, fractional distillation of crude oil, octane number, cetane number.

Gaseous fuels: Advantages of gaseous fuels, analysis of flue gases – Orsat's apparatus

Lubricants: Functions of Lubricants – Types of Lubrication and Mechanism – Thick Film or Hydrodynamic Lubrication. Thin Film or Boundary Lubrication. Extreme pressure lubrication, Classification and Properties of Lubricants.

TEXT BOOKS:

1. Engineering Chemistry: P.K. Jain and M.K. Jain, Dhanpathrai Publications – 14th Edition.
2. Text Book of Engineering Chemistry – Shasi Chawla, Dhantpat Rai publishing Company, New Delhi (2008).

REFERENCES:

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

**Syllabus for B. Tech. I Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING**

**Code: 101IT01 COMPUTER PROGRAMMING
(Common to all Branches)**

L	T	P/D	C
3	1	-	3

UNIT – I :

Computer fundamentals – Computer architecture (block diagram), CPU, Memory, Types of memory, I/O devices.

Software Development Steps - Algorithms, pseudo code, flowcharts, Software Development Life Cycle.

UNIT – II :

C fundamentals – History of C Language, Features of C, Structure of C, Character set, identifiers, constants, variables and keywords.

Simple data types – char, int, float, double. Data type modifiers and qualifiers. Memory allocation for these types.

Operators – Unary, binary and ternary, precedence and association rules among operators. **Decision control structures** – if.. else, dangling else, switch statement.

Repetitive control structures - while, do, while, for, break and continue statements, Nested structures.

UNIT – III :

Functions – Function definition, arguments, return value, prototype, arguments and parameters.

Parameter passing – Call by value and call by reference.

Recursive functions – Definition, examples, advantages and disadvantages.

Macros – Definition, examples, comparison with functions.

Arrays – Definition, initialization, strings as character arrays, two dimensional and multidimensional arrays. Passing arrays as arguments to functions.

UNIT – IV

Pointers – Definition, Pointer variable, Pointer to a pointer, Memory mapping, arithmetic operations on pointers, relationship between arrays and pointers, pointers as arguments and return type of a function, pointers to a function, array of pointers and pointers to arrays, dynamic memory allocation.

Strings – Input output functions, string handling functions.

Structures – Declaring a structure, array of structures, nested structures, unions, passing structures as arguments to a function and structure as a return type of a function.

UNIT – V

Files – Data Organization, file operations, file opening modes, creating, storing, retrieving, appending, editing, copying files, Examples illustrating counting characters, tabs, spaces, string (line) I/O in files, record I/O in files, text files and binary files, command line arguments, error handling functions in files random access files.

UNIT – VI

Applications – Case study of simple bank transactions and program development.

Preprocessor directives – Macro expansion, file inclusion, condition compilation, miscellaneous directives.

Graphics in C – Line drawing, Rectangle, ellipse, working with image, move to function, and graphic related library functions.

TEXT BOOKS:

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

REFERENCES:

1. Let us C by Yashwanth P. Kanetkar 8th edition BPB publications.
2. Understanding pointers in C by Yashwanth P. Kanetkar.
3. Computer programming for teens by Mary Farrell.
4. Working with C by Yashwanth P. Kanetkar.
5. Graphics under C by Yashwanth P. Kanetkar.
6. The complete reference, 4th edition, Herbert Schmidt.
7. C Faqs by Steve Summit.

Syllabus for B. Tech. I Year I semester**ELECTRICAL & ELECTRONICS ENGINEERING****Code: 101ME01 ENGINEERING DRAWING - I**

L	T	P/D	C
2	-	4	4

UNIT – I - INTRODUCTION TO ENGINEERING DRAWING:

Drawing Instrument and their use Types of lines, use of pencils, Lettering, Rules of dimensioning.

Construction of polygons: Inscription and superscription of polygons given the diameter

SCALES: Scales used in Engineering Practice and Representative Fraction – construction of Plain, diagonal, Vernier Scales.

Curves used in Engineering Practice and their Constructions.

- Conic Sections including the Rectangular Hyperbola-General method only.
- Cycloid, Epicycloid and Hypocycloid
- Involute

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 – Alteration of position and Auxiliary plane method.

UNIT –V - SECTIONS OF SOLIDS:

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

UNIT –VI - DEVELOPMENT OF SURFACES:

Development of Surfaces of Right Regular Solids – Prisms, Cylinder, Pyramid Cone and their parts

TEXT BOOKS:

- Engineering Drawing, N.D. Bhat / Charotar
- Engineering Drawing, Narayana and Kannaiah / Sciotech publishers.

REFERENCES:

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

**Syllabus for B. Tech. I Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING**

Code: 101EN71 ENGLISH LANGUAGE LAB – I

L	T	P/D	C
-	-	2	1

INTRODUCTION:

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 reading passages from the computer monitor, thus providing them with the required facility to face computer-bases competitive exams such GRE, TOEFL, GMAT etc.
3. To enable them to learn better pronunciation through stress on word accent, intonation, and rhythm.
4. To train them to use language effectively to face interviews, group discussions, public speaking.
5. To initiate them into greater use of the computer in resume preparation, report writing, format-making etc.

SYLLABUS:

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

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

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

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
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101PH71 ENGINEERING PHYSICS LAB –I
(Common to EEE, ECE, ECM, CSE, IT)

L	T	P	C
-	-	3/2	1

PHYSICS EXPERIMENTS:

1. Calculation of error - Error estimation.
2. Determination of wavelength of a given laser source of light by using diffraction Grating.
3. To find the frequency of a Tuning fork - Melde's Experiment.
4. To find the frequency of ac signal generator - A.C. Sonometer.
5. Electrical conductivity of a given material
6. To study the Characteristics of a Thermistor.
7. R.C. Network.
8. L.C.R. series and parallel resonance.
9. Energy gap of a semiconductor
10. Planck's constant

Syllabus for B. Tech. I Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101CH71 ENGINEERING CHEMISTRY LAB-I
(Common to EEE, ECE, ECM, CSE, IT)

L	T	P	C
-	-	3/2	1

CHEMISTRY EXPERIMENTS: (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
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101IT71 COMPUTER PROGRAMMING LAB

L	T	P/D	C
-	-	3	2

1. **UNIT I (CYCLE 1):**
2.
 - 2.1. Write an algorithm for converting a given Celsius temperature to its equivalent Fahrenheit temperature and draw a flowchart using RAPTOR tool and test it using the data: 0⁰C, 35⁰C, 55.35⁰C, and 100⁰C.
 - 2.2. Write an algorithm to find the largest of three given numbers and draw a flowchart using RAPTOR tool and test it for data: (5, 7, 2), (3.5, 5.8, 9.2), (112, 19.6, 82.7).
 - 2.3. Write an algorithm and draw a flowchart for finding the roots and nature of roots of a quadratic equation, given its coefficients and test it for data: (1, 3, 2), (2, 1, 6), (6, 5,1).
3. **UNIT I (CYCLE 2)**
 - 3.1. Write an algorithm and draw a flowchart for computing the sum of the digits of a given integer and test it for the data: 3259, 89725, 10092.
 - 3.2. Write an algorithm and draw a flowchart to test whether a given integer is a prime number or not. Test for the data: 29, 35, 89.
 - 3.3. Write an algorithm and flowchart for printing the first n Fibonacci numbers, give n. Test using the data: 10, 25, 50.
4. **UNIT II (CYCLE 3)**
 - 4.1. Write an algorithm, flowchart, and C program for:
 - 4.1.1. Finding the area and circumference of a circle of given radius.
 - 4.1.2. Finding the volume of a sphere of given radius.
 - 4.1.3. Finding the lateral surface area of a right circular cone of given base radius and height.
 - 4.1.4. Finding selling price of an item, given its cost price and profit percent.
 - 4.1.5. Finding the interest on a given principal for a given period of time at a given rate of
 - 4.1.6. per year.
 - 4.2. Write a C program to display all the sizes of data types in C.
 - 4.3. Write a C program to display a given decimal integer into an equivalent octal number and hexadecimal number.
5. **UNIT II (CYCLE 4)**
 - 5.1. Write a C program to find the roots and nature of the roots of a quadratic equation, given its coefficients.
 - 5.2. Write a C program for finding the largest of three given numbers.
 - 5.3. 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.
6. **UNIT II (CYCLE 5)**
 - 6.1. Write a program that reads a letter given by the user and prints whether it is a vowel or not.
 - 6.2. An institution gives grades to its students as follows:
 - a. Grade A if he gets 80 or more marks
 - b. Grade B if he gets between 60 and 79 (both inclusive)
 - c. Grade C if he gets between 50 and 59 (both inclusive)
 - d. Grade D if he gets between 40 and 49 (both inclusive)
 - e. Grade F otherwise.

Marks of student are always an integer ranging from 0 to 100. Use case structure to print the grade obtained by the candidate, given his marks.

- 6.3. Write three C programs to print a multiplication table for a given number using while, do..while, and for loops.
7. **UNIT II (CYCLE 6)**
- 7.1. Write a C program to compute the sum of:
- 7.1.1. $1+x+x^2+x^3+\dots+x^n$, given x and n.
- 7.1.2. $1! + 2! + 3! + \dots + n!$, given n.
- 7.1.3. $1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10! + \dots$ to n terms where the n^{th} term becomes less than 0.0001.
- 7.2. Write a C program in the menu driven style to perform the operations +, -, *, /, % between two given integers.
- 7.3. Write a C program to find the largest and the least of some numbers given by the user.
8. **UNIT III (CYCLE 7)**
- 8.1. Write C functions for the following:
- 8.1.1. A function that takes an integer n as argument and returns 1 if it is a prime number and 0 otherwise.
- 8.1.2. A function that takes a real number x and a positive integer n as arguments and returns x^n .
- 8.1.3. A function that takes a positive integer n as an argument and returns the n^{th} Fibonacci number.
- 8.2. Using recursion write C functions for the following:
- 8.2.1. Factorial of a non-negative integer n.
- 8.2.2. Number of combinations of n things taken r at a time.
- 8.2.3. Greatest Common Divisor of two integers.
- 8.2.4. Least Common Multiple of two integers.
9. **UNIT III (CYCLE 8)**
- 9.1. Write a menu driven style program to compute the above functions (cycle 7) on the choice of the function given by the user.
- 9.2. Write a C program to solve the problem of Towers of Hanoi.
- 9.3. Write a program to generate Pascal's triangle.
- 9.4. Write a program to count the number of letters, words, and lines in a given text.
10. **UNIT III (CYCLE 9)**
- 10.1. 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.
- 10.2. 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.
- 10.3. 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.
- 10.4. Define macros for the following and use them to find sum of the squares of the minimum and maximum of two given numbers.
- 10.4.1. Larger of two numbers.
- 10.4.2. Smaller of two numbers.
- 10.4.3. Sum of the squares of two numbers.
11. **UNIT IV (CYCLE 10)**
- 11.1. Write a function to swap two numbers.
- 11.2. Write a function to compute area and circumference of a circle, having area and circumference as pointer arguments and radius as an ordinary argument.
- 11.3. Write a C program to implement the operations of matrices – addition, subtraction, multiplication.
- 11.4. Write a program to find whether a given matrix is symmetric, lower triangular, upper triangular, diagonal, scalar, or unit matrix.

12. **UNIT IV (CYCLE 11)**
 - 12.1. 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.
 - 12.2. Define a structure point. Write a program to find the distance between two points.
13. **UNIT IV (CYCLE 12) :**
 - 13.1. 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.
 - 13.2. Define functions – length of the string, copy, concatenate, convert into upper case letters, compare two strings for alphabetical order – over strings and implement them in a program.
14. **UNIT V (CYCLE 13) :**
 - 14.1. Write a program to:
 - 14.1.1. 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.
 - 14.1.2. Open the file created above and display the contents of the file.
 - 14.1.3. Copy a file into some other file, file names given by the user or by command line arguments.
 - 14.1.4. Append a user mentioned file to another file.
 - 14.1.5. Reverse the first n characters of a file.
15. **UNIT V (CYCLE 14) :**
 - 15.1. Store the marks of the students of a class into file and the display the results as per the rules of your institution.
 - 15.2. In the above file search a student by roll no. and display the particulars.
16. **UNIT VI (CYCLE 15) :**
 - 16.1. Write a program to draw figure of your liking with appropriate colors.
 - 16.2. Write a program to implement simple bank transactions – opening an account, closing an account, deposit money into an account, withdraw money from an account, maintaining the customer database, and daybook.

**Syllabus for B. Tech. I Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code:101ME71 ENGINEERING WORKSHOP – I**

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

ENGINEERING WORKSHOP – I (ALTERNATE WEEKS)

1. House Wiring:

- To connect the Tube Light as per circuit diagram
- To connect the Calling Bell as per circuit diagram

2. Home Appliances :

Study of circuits and systems used in various home appliances such as Fans, Mixers, Washing machines etc.,

3. Welding :

- To prepare a Lap Joint
- To prepare a Butt Joint

4. Machine Shop (demonstration) :

Operations performed on Lathe, Drilling, Milling and grinding machines

**Syllabus for B. Tech. I Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code:10IIT72 IT WORKSHOP-I**

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

IT Workshop-I (Alternate weeks) :

WEEK 1 : Introduction to computers, identify the peripherals of a computers, components in a CPU & its functions, draw the block diagram of the cpu along with the configuration of each peripherals.

WEEK 2 : disassemble & assemble the PC back to working condition [video, manual], Hardware troubleshooting.

WEEK 3 : Introduction to operating system [Basics], Installation of Windows XP.

WEEK 4 : DOS (Internal & External) commands, work on that commands, comparisons of windows & open source OS.

WEEK 5 :Installation of Linux O.S [Advanced debian, ubuntu], Basic Linux Commands, work on that commands.

WEEK 6 : Software troubleshooting, Identify the system software problems & fix it to get the computer back to working conditions.

Cyber Hygeine : Installation of Antivirus software, Configure their personal firewall & windows update on their computer, customize the browsers to block POP UPS, block active x downloads to avoid viruses and worms.

WEEK 7 : INTRODUCTION TO INTERNET & LAN :

Browsing the Net : Connect the LAN and access the Internet, Know how to acces the websites and email.

Search Engines:

Introduction to search engines, types of search engines, uses of search engines, how to use search engine. Give few topics to students for which they need to search on GOOGLE.

Syllabus for B. Tech. I Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code:101EN02 ENGLISH – II
(Common to all branches)
(English Language Teaching Through Literature)

L	T	P/D	C
2	-	-	2

UNIT – I :

1. Speech : Swami Vivekananda
2. Short Story : The Lottery Ticket: Anton Chekhov
3. Letter Writing

UNIT – II :

1. Speech : Polonious Speech –An extract from Shakespeare’s *Hamlet*
2. Short Story : Ha’ Penny – Alan Paton
3. Sentence Construction

UNIT – III :

1. Biography : Sam Pitroda
2. Short Story : Subha – Rabindranath Tagore
3. Letter : Abraham Lincoln’s Letter to His Son’s Teacher

UNIT – IV :

1. Biography : Mother Theresa
2. Short Story : The Only American From Our Village by Arun Joshi
3. Note-Making

UNIT – V :

1. Poem : The Gift of India – Sarojini Naidu
2. Short story : Diamond Rice - Ranga Rao S.S
3. Analogies

UNIT –VI :

1. Poem : La Belle Dame sans Merci – John Keats
2. Short Story : Luck – Mark Twain
3. Reading Comprehension

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.

REFERENCES:

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
ELECTRICAL & ELECTRONICS ENGINEERING
Code:101MA03 ENGINEERING MATHEMATICS – II
(Common to all branches)

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 to geometry, law of natural growth and decay and Newton’s law of cooling, electrical circuits, 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 – Applications: Bending of beams, electrical circuits, Simple harmonic motion.

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 and systems of linear differential equations with constant coefficients using Laplace transformations.

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 - 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, Green’s theorem in plane, Gauss-Divergence theorem, Stoke’s theorem and verification of problems (without proof).

TEXT BOOKS:

1. Higher Engineering Mathematics, B.S. Grewal, Khanna Publications, New Delhi.
2. Engineering Mathematics, B.V. Ramana, Tata McGraw Hill Publishing Company Ltd.

REFERENCES:

1. A text Book of KREYSZIG’s Engineering Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications
2. A Text book of Engineering Mathematics, M. Venkata Krishna, Jaico Publishing House, 2010.
3. Jain, S.R.K, Advanced Engineering Mathematics, Narosa Publishing House, London, 2002.

Syllabus for B. Tech. I Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code:101PH02 ENGINEERING PHYSICS – II
(FOR EEE, ECE, ECM, CSE, IT)

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, Equation of Continuity, Direct & Indirect Band Gap Semiconductors, Hall Effect.

UNIT-II - PHYSICS OF SEMICONDUCTOR DEVICES:

Formation of PN Junction, Open Circuit PN Junction, Energy Diagram of PN Diode, I-V Characteristics of PN Junction, PN Diode as a Half wave & Full wave Rectifiers (Forward and Reverse Bias), Diode Equation, LED, Pin & Avalanche Photo Diodes, Photo voltaic cells.

UNIT-III - DIELECTRIC PROPERTIES:

Electric Dipole, Dipole Moment, Dielectric Constant, Electric Susceptibility, Polarizability, Electronic, Ionic and Orientation Polarizations and Calculation of Polarizabilities -Internal Fields in Solids, Clausius - Mossotti Equation, 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, Type I & Type II superconductors, Magnetic levitation, 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, Ruby Laser, Helium-Neon Laser, Carbon Dioxide Laser, Semiconductor Diode Laser, Applications of Lasers.

Fiber Optics: Principle of Optical Fiber, Acceptance Angle and Acceptance Cone, Numerical Aperture, Types of Optical Fibers and Refractive Index Profiles – step & Graded index optical fiber, 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, Physical Vapour Deposition, Pulsed Laser Vapour Deposition Methods, Characterization (XRD&TEM), carbon nano tubes, Magnetic tunnel junction, Giant magneto resistance (GMR) devises.

TEXT BOOKS

1. Electrical Engineering Materials by A. J Dekker , Addison Wesley
2. Applied Physics by M Chandrashekar and P Appla Naidu, V.G.S. Book Links

REFERENCES:

1. Introduction to Solid State Physics, by Charles Kittel, John Wiley
2. Solid State Physics Neil by W. Ashcroft , N. David Mermin, Thomson Learning
3. Physics for semiconductor devices by Michael Shur, PHI Publications
4. Engineering Physics P K Palanisamy, Scitech Publications
5. Nanotechnology: A Gentle Introduction To The Next Big Idea by M Ratner, D Ratner, Pearson Publications
6. Nano Materials by A K Bandyopadhyay, New Age International

Syllabus for B. Tech. I Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101CS01 DATA STRUCTURES AND C++

L	T	P/D	C
3	1	-	3

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.

UNIT – II:

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

UNIT – III:

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

UNIT – IV:

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

UNIT – V:

Introduction to c++ programming-object oriented programming concepts, Structured Vs OOP.
 Classes and objects-class definition, Objects, class scope and accessing members, access functions and utility functions.

UNIT – VI:

Constructors-default constructor, parameterized constructor, constructor initialization list, copy constructor.
 Destructors, Static class members this pointer, friend functions and classes, Dynamic memory management with operators new and delete.
 Overloading-function overloading, Operator overloading, restrictions on operator overloading, overloading unary and binary operators, type conversion, templates, inheritance.

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
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 10IME02 ENGINEERING DRAWING - II

L	T	P/D	C
1	2	-	2

UNIT – I - INTERSECTION OF SIMILAR SOLIDS:

Line method, Cutting plane method, Intersection of prism Vs prism, Cylinders Vs Cylinder, Cone Vs Cone

UNIT – II - INTERSECTION OF DIS-SIMILAR SOLIDS:

Cylinder Vs prism, Cylinder Vs cone, Cone Vs Prism

UNIT – III - ISOMETRIC PORJECTIONS :

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.

UNIT –IV - TRANSFORMATION OF PROJECTIONS:

Conversion of Orthographic Views to Isometric Views and Vice-Versa.

UNIT –V - PERSPECTIVE PROJECTION:

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. Bhat / Charotar
2. Engineering Drawing, Narayana and Kannaiah / Sciotech publishers.

REFERENCES:

1. Engineering graphics with Auto CAD- R.B Choudary / Anuradha Publishes
2. Engineering Drawing, K.Venugopal /G.Sreekanjana, New Age International Publishers.

Syllabus for B. Tech. I Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code:101EC05 ELECTRONIC DEVICES & CIRCUITS
(Common to ECE,ECM and EEE)

L	T	P/D	C
4	-	-	4

UNIT-I -ELECTRON DYNAMICS AND CRO:

Motion of charged particles in electric and magnetic fields, Simple problems involving electric and magnetic fields only. Electrostatic and magnetic focusing, Principles of CRT, deflection sensitivity (Electrostatic and magnetic deflection), Parallel Electric and Magnetic fields, Perpendicular Electric and Magnetic fields.

UNIT-II-PN JUNCTION DIODE:

PN junction at equilibrium - Forward and reverse bias junctions - steady state conditions - forward and reverse bias- transient and AC conditions - non ideal junctions – break down of junctions(Avalanche and Zener Break down) -Zener Diode Characteristics.

High Frequency Diodes: Principles of operation of Tunnel Diode, Gunn Diode, Varactor Diode, Schottky barrier Diode, PIN Diode

UNIT-III - BIPOLAR JUNCTION TRANSISTOR:

Fundamentals of BJT operation- saturation, active and cut off characteristics - switching characteristics - characteristics - minority carrier profiles -BJT models-Frequency limitations of BJTs.-Biasing methods-stabilization, Thermal runaway in BJTs. Small signal model. BJT as an amplifier in CB, CE configurations -h-parameter representation- Determination of voltage gain, current gain, input impedance and output impedance. CE amplifier - its analysis and its frequency response.

UNIT-IV-FIELD EFFECT TRANSISTOR:

JFET characteristics (Qualitative and Quantitative discussion), Small signal model of JFET, MOSFET characteristics (Enhancement and depletion mode), Symbols of MOSFET, Comparison of Transistors, Introduction to SCR and UJT.

UNIT-V-TRANSISTOR AMPLIFIERS:

Analyses and design of CC, CE and CB configurations - RC coupled amplifiers – Frequency response of amplifiers

UNIT- VI-VOLTAGE REGULATORS:

Terminology, Basic Regulator Circuit, Short Circuit Protection, Current Limiting, Specifications of Voltage Regulator Circuits, Voltage Multipliers.

TEXT BOOKS :

1. Electronic Devices and Circuits-J.Millman, C.C.Halkias and Satyabratha Jit Tata Mc Graw Hill, 2nd 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 and Radio Engineering-F.E Terman, McGraw-Hill, 4th ed., 1955
4. Microwave Devices and Circuits-Samuel Y. Liao, PHI, 3rd Edition, 1994

Syllabus for B. Tech. II Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code:101EE01 CIRCUITS & NETWORKS – I

L	T	P/D	C
3	1	-	3

UNIT – I : INTRODUCTION TO ELECTRICAL CIRCUITS :

Circuit concept – R – L-C parameters – voltage and current sources Independent and dependent sources – source transformation – voltage current relationship for passive elements (for different input signals – square, ramp, saw tooth, triangular)

UNIT – II : SINGLE PHASE A.C. CIRCUITS :

R.M.S. and Average values and form factor for different periodic wave forms, steady state analysis of R,L. and C (in series, parallel and series parallel combinations) with sinusoidal excitation – Concept of Reactance, Impedance, Substance and Admittance – Phase and Phase difference – concept of power factor, Real and Reactive powers – J – Notation, complex and Polar forms of o^f representation, Complex – J notation, Complex power.

UNIT – III:LOCUS DIAGRAMS & RESONANCE:

Locus diagrams – series R – L , R-C, Parallel combination with variation of various parameters – Resonance series, parallel circuits, concept of band width and Q factor.

UNIT - IV : MAGNETIC CIRCUITS :

Magnetic Circuits – Faraday’s Laws of electromagnetic induction – concept of self and mutual inductance –dot conversation – coefficient of coupling –composite magnetic circuit –analysis of series and parallel magnetic circuits.

UNIT – V: NETWORK TOPOLOGY :

Definitions – Graph – Tree, Basic cutset and Basic Tieset matrices for planner networks – Loop and Nodal methods of analysis of Networks with dependent & independent voltage and current sources – duality & Dual networks.

UNIT VI: NETWORK THEOREMS (WITH D.C. & A.C.):

Tellegen’s Superposition, Reciprocity, Thevinin’s Norton’s, Maximum Power transfer, Millman’s and Compensation theorems for D.C. excitations. Tellegen’s Superposition, Reciprocity, Thevinin’s Norton’s, Maximum Power transfer, Millman’s and Compensation theorems for A.C. excitations.

TEXT BOOKS:

1. Engineering circuit analysis by William Hayt and Jack E.Kemmerly, Mc.Graw Hill Company , 6th edition.
2. Circuits & Networks by A./Sudhakar and Shyamamohan S.Palli Tata Mc.Graw – Hill.

REFERENCES:

1. Network Analysis by M.E. Vam Valkenberg.
2. Linear Circuit analysis (time domain phasor and Laplace transform approaches) Second edition by Raymond A.Decarlo and PENMIN – LIN, Oxford University Press, Second edition 2004.

Syllabus for B. Tech. I Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EN72 ENGLISH LANGUAGE LAB-II

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 improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
2. Further they would be required to communicate their ideas relevantly and coherently in writing

SYLLABUS:

1. Functional English –Starting a conversation-responding appropriately and relevantly-using the right body language-role plays based on different situations
2. Vocabulary building – Synonyms and antonyms, word roots, one-word substitutes, prefixes and suffixes, etymology, analogy, idioms and phrases
3. Reading Comprehension – Reading for facts, guessing meanings from the context, scanning, skimming, inferring meaning and critical reading
4. Report Writing Strategies– Types of formats and styles, subject matter – organization, clarity, coherence, and style, planning, data collection, tools and analysis
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.

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
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101CS71 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, in order and post order.
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 descremanant 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 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.

Syllabus for B. Tech. I Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code:101ME72 ENGINEERING WORKSHOP-II

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

ENGINEERING WORKSHOP-II (Alternate weeks):

1. Fitting:

- To make a Step Fitting as per the dimensions
- To make a Half Round Fitting as per the dimensions

2. Tin Smithy :

- To prepare a T-Joint
- To prepare a Corner Joint

3. Smithy:

- Fabrication of S - Shape
- Fabrication of Hook shape

4. Plumbing (Demonstration) :

Preparation of pipes, Elbow joint, T-joint, assembly of Gate valve, non-return valves, couplings, taps.

Syllabus for B. Tech. I Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code:101PH72 ENGINEERING PHYSICS LAB - II

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

ENGINEERING PHYSICS LAB –II(Alternate weeks):

1. Hall effect
2. Dielectric constant of a given material
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. Determination of rigidity modulus of a given metal wire - Torsional Pendulum
9. Determination of the acceleration due to gravity by compound pendulum.
10. Ultrasonic velocity

Syllabus for B. Tech. II Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code:101MA06 MATHEMATICAL METHODS
 (Common to EEE and Mechanical)

L	T	P/D	C
3	1	-	3

UNIT-I - SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS:

Introduction – The Bisection Method – The Method of False Position – The Iteration Method – Newton-Raphson Method.

Interpolation: Introduction— Finite differences- Forward Differences- Backward differences –Central differences –Newton’s formulae for interpolation – Gauss Central Difference Formulae (without proofs)

UNIT-II - INTERPOLATION WITH UNEVENLY SPACED POINTS :

Lagrange’s Interpolation formula – Newton’s divided difference method.

Curve Fitting: Fitting a straight line – Second degree curve – exponential curve – power curve by method of least squares

UNIT-III - NUMERICAL INTEGRATION:

Trapezoidal rule – Simpson’s 1/3 Rule – Simpson’s 3/8 Rule, Gaussian quadrature rule. Numerical solution of Ordinary Differential equations: Solution by Taylor’s series – Picard’s Method of successive Approximations – Euler’s Method – Runge-Kutta Methods (without proofs).

UNIT IV - 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. Applications of Partial Differential Equations ,Heat Equation, Wave Equation and Laplace Equation

UNIT -V - FOURIER TRANSFORMS:

Fourier transformation, sine and cosine transformations, Finite Fourier transforms, parseval’s identities. Applications of Fourier Transforms to solve boundary value problems.

UNIT-VI - INTRODUCTION TO SPECIAL FUNCTIONS:

Beta-Gamma Functions-Bessel’s Functions-properties-Legendre’s Polynomials and properties.

TEXT BOOKS:

1. Higher Engineering Mathematics, B.S. Grewal , Khanna Publications, New Delhi.
2. Engineering Mathematics, B.V.Ramana, Tata McGraw Hill Publishing Company Ltd.

REFERENCES:

1. A text Book of KREYSZIG’s Engineering Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications
2. A Text book of Engineering Mathematics, M.Venkata Krishna, Jaico Publishing House, 2010.
3. Jain, S.R.K, Advanced Engineering Mathematics, Narosa Publishing House, London 2002.

Syllabus for B. Tech. II Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EC06 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 Implicate 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.

UNIT – V- SYMMETRIC NETWORKS:

Properties of Symmetric Functions, Symmetric relay contact networks, Identification and realization of symmetric functions.

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

UNIT – VI - 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.

TEXTBOOKS:

1. Switching & Finite Automata theory – Zvi Kohavi, TMH, 2nd Edition.
2. Switching Theory and Logic Design – CVS Rao, Pearson Education, 2005.

REFERENCES:

1. An Engineering Approach to Digital Design – Fletcher, PHI. Digital Logic – Application and Design – John M. Yarbrough, Thomson.
2. Fundamentals of Logic Design – Charles H. Roth, Thomson Publications, 5th Edition, 2004.
3. Digital Logic Applications and Design – John M. Yarbrough, Thomson Publications, 2006.

Syllabus for B. Tech. II Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101BT37 HUMAN VALUES, ETHICS & IPR
(Common to all branches)

L	T	P/D	C
2	-	-	2

UNIT -I:**A: INDIAN CULTURE- HUMAN VALUES AND VALUE EDUCATION:**

Purpose of Education – Indian Perspective, Civilization and Culture, Wisdom of selflessness and sacrifice, ancient wisdom on good governance and Happy life, bunch of thoughts and contribution of ancient to modern sages/ monks on Indian culture, need for interfaith understanding, cultural unity of India, what sages, seers said about knowledge devotion, meditation and happiness in life.

Concept of Human Values, Morals, Ethics, Characteristics of Values, Principles and Types of Values, Core Values, Rules of Behaviour, Distinguishing and Defining ‘Human’ Values. Truth Love and Caring, Peace, Responsibility, Justice, Human Values Applied in Practice, Values and Psychic Health, The Hierarchy of Human Values, Values of Nature, **Values of the Person**, Moral Values, **Value Education**, Basic Guidelines, content and process of Value Education.

UNIT- II:

B:ENGINEERING AND PROFESSIONAL ETHICS: Engineering and professionalism. Types of ethics and morality. Ethics in various professions. Professional codes of conduct and organizational mission vision and culture. Engineering Standards. Social and Global dimension of professions vis-a-vis Technology and Growth. Trust and Reliability. Role of Transparency, Honesty, Integrity and sincerity in Professional life.

UNIT -III:**C: HUMAN VALUES AND ETHICS:**

Understanding Relationship between Ethics, Morality, Law, Characteristics of an Ethical Person. Professional Ethics, Professional Responsibility, Codes of conducts, Practice, Dos and DON'Ts of various professions. Ethical Behavior and issues in various professions (like business, marketing, media and advertising, legal, medical, financial, Education, public services and Governance Etc- through case studies). Impact of Ethical behavior and Violations on society at large (Law, culture, religion and life style). Ethical issues arising from modern technology like communications and computers. Ethical Standards, Ethics in Engineering. General Business and Ethics, Religious Views on Business Ethics, Work Ethics, Criticisms of Work Ethic Concept, Working with Ethics.

UNIT -IV:**D:RELEVANCE OF ANCIENTS WISDOM AND PRACTICES FOR PROFESSIONALS IN MODERN AGE:**

Problems of Modernity and impact on modern life (self, family and society). Problems of freedom in Individual centric vs family centric social structure. Health issues related to Individual freedom, competition and professional life. Relevance of Indian wisdom on individual, family and social life. Relevance of yogic and spiritual practices in modern times for intellect-mind-body harmony. Science and religion, concentration and meditation, peace of mind, Hinduism in view of Mahatma Gandhi, Role of expanse of Technology in Third Millennium. Indian literature and cultural identity, Teacher- Student relationship. Need for balance and harmonious growth in all stages of life and Development into holistic professional.

UNIT- V

E: INTELLECTUAL PROPERTY RIGHTS (IPR)

Invention and Creativity, Basic Types of Property, Need for Protection of IPR, IP Types – Industrial Property (Patents, Trade Marks, Trade Secrets, Industrial Designs and Integrated Circuits), Copyrights and Related Rights, Geographical Indications.

UNIT-VI

WIPO Mission and Activities, GATT & Trips, Indian Position on WTO and strategies, Indian IPR legislations-commitments to WTO-Patent Ordinance and the Bill, Draft of a National Intellectual Property Policy, Case Studies on IP.

TEXT BOOKS

1. Charles E. Harris, Michael S .Pritchard & Michael J . Rabins “Engineering Ethics” –CENGAGE Learning
2. I.V. Chalapati Rao “Ancient Wisdom, Modern Insights” - Sri Yabaluri Raghavaiah Memorial Trust
3. Smriti Srivastava “Human Values and Professional Ethics” – S.K. Kataria & Sons.
4. Anitha Rao R & Bhanoji Rao “Intellectual Property Rights- A Primer”, Eastern Book Company, 2008.

REFERENCES:

1. Govindarajan M, Natarajan S, Senthil Kumar V.S, “Engineering Ethics”, Prentice Hall of India, New Delhi, 2004.
2. Charles D. Fleddermann, “Engineering Ethics”, Pearson Education/Prentice Hall, New Jersey, 2004(Indian Print)
3. Deborah E. Bouchoux “ Intellectual Property Rights” CENGAGE Learning

Syllabus for B. Tech. II Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EE02 ELECTRO MAGNETIC FIELDS

L	T	P/D	C
3	1	-	3

UNIT – I ELECTROSTATICS:

Electrostatic Fields – Coulomb’s Law – Electric Field Intensity (EFI) – EFI due to a line and a surface charge – Work done in moving a point charge in an electrostatic field – Electric Potential – Properties of potential function – Potential gradient – Gauss’s law – Application of Gauss’s Law – Maxwell’s first law, $\text{div}(\mathbf{D}) = \rho_v$ – Laplace’s and Poisson’s equations – Solution of Laplace’s equation in one variable. Electric dipole – Dipole moment – potential and EFI due to an electric dipole – Torque on an Electric dipole in an electric field – Behavior of conductors in an electric field – Conductors and Insulators.

UNIT – II DIELECTRIC & CAPACITANCE:

Electric field inside a dielectric material – polarization – Dielectric – Conductor and Dielectric – Dielectric boundary conditions, Capacitance – Capacitance of parallel plate and spherical and co-axial capacitors with composite dielectrics – Energy stored and energy density in a static electric field – Current density – conduction and Convection current densities – Ohm’s law in point form – Equation of continuity.

UNIT – III MAGNETO STATICS:

Static magnetic fields – Biot-Savart’s law – Oesterd’s experiment - Magnetic field intensity (MFI) – MFI due to a straight current carrying filament – MFI due to circular, square and solenoid current – Carrying wire – Relation between magnetic flux, magnetic flux density and MFI – Maxwell’s second Equation, $\text{div}(\mathbf{B}) = 0$ – Ampere’s circuital law and its applications viz. MFI due to an infinite sheet of current and a long current carrying filament – Point form of Ampere’s circuital law – Maxwell’s third equation, $\text{Curl}(\mathbf{H}) = \mathbf{J}_c$, Field due to a circular loop, rectangular and square loops.

UNIT – IV FORCE IN MAGNETIC FIELDS:

Magnetic force - Moving charges in a Magnetic field – Lorentz force equation – force on a current element in a magnetic field – Force on a straight and a long current carrying conductor in a magnetic field – Force between two straight long and parallel current carrying conductors – Magnetic dipole and dipole moment – a differential current loop as a magnetic dipole – Torque on a current loop placed in a magnetic field

UNIT – V MAGNETIC POTENTIAL:

Scalar Magnetic potential and its limitations – vector magnetic potential and its properties – vector magnetic potential due to simple configurations – vector Poisson’s equations.
 Self and Mutual inductance – Neumann’s formulae – determination of self-inductance of a solenoid and toroid and mutual inductance between a straight long wire and a square loop wire in the same plane – energy stored and density in a magnetic field. Introduction to permanent magnets, their characteristics and applications.

UNIT – VI TIME VARYING FIELDS:

Time varying fields – Faraday’s laws of electromagnetic induction – Its integral and point forms – Maxwell’s fourth equation, $\text{Curl}(\mathbf{E}) = -\partial\mathbf{B}/\partial t$ – Statically and Dynamically induced EMFs – Simple problems -Modification of Maxwell’s equations for time varying fields – Displacement current – Poynting Theorem and Poynting vector.

TEXT BOOKS:

1. “Engineering Electromagnetic’s” by William H. Hayt & John. A. Buck Mc. Graw-Hill Companies, 7th Editon.2006.
2. “Electro magnetic Fields” by Sadiku, Oxford Publications

REFERENCES :

1. “Introduction to Electro Dynamics” by D J Griffiths, Prentice-Hall of India Pvt. Ltd, 2nd edition
2. “Electromagnetics” by J P Tewari.
3. “Electromagnetics” by J. D Kraus Mc Graw-Hill Inc. 4th edition 1992.
4. “Electromagnetic fields”, by S. Kamakshaiiah, Right Publishers, 2007

**Syllabus for B. Tech. II Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EE03 ELECTRICAL MACHINES - I**

L	T	P/D	C
4	1	-	4

UNIT – I- D.C. GENERATORS – CONSTRUCTION & OPERATION:

D.C. Generators – Principle of operation – Action of commutator – constructional features – armature windings – lap and wave windings – simplex and multiplex windings – use of laminated armature – E. M.F Equation – Problems

UNIT – II - ARMATURE REACTION IN D.C. GENERATOR:

Armature reaction – Cross magnetizing and de-magnetizing AT/pole – compensating winding – commutation – reactance voltage – methods of improving commutation.

UNIT – III -TYPES OF D.C GENERATORS:

Methods of Excitation – separately excited and self excited generators – build-up of E.M.F - critical field resistance and critical speed - causes for failure to self excite and remedial measures.

UNIT –I V - LOAD CHARACTERISTICS OF GENERATORS :

Load characteristics of shunt, series and compound generators – parallel operation of d.c series generators – use of equalizer bar and cross connection of field windings – load sharing.

UNIT – V -D.C. MOTORS AND SPEED CONTROL METHODS :

D.C Motors – Principle of operation – Back E.M.F. - Torque equation – characteristics and application of shunt, series and compound motors – Armature reaction and commutation – Speed control of d.c. Motors: Armature voltage and field flux control methods. Ward-Leonard system – Principle of 3 point and 4 point starters – protective devices.

UNIT – VI -TESTING OF D.C. MACHINES :

Testing of d.c. machines: Losses – Constant & Variable losses – calculation of efficiency – condition for maximum efficiency -- Methods of Testing – direct, indirect and regenerative testing – brake test – Swinburne’s test – Hopkinson’s test – Field’s test – Retardation test – separation of stray losses in a d.c. motor test.

TEXT BOOKS:

1. Electric Machinery – A. E. Fitzgerald, C. Kingsley and S. Umans, Mc Graw-Hill Companies, 5th edition
2. Electrical Machines – P.S. Bimbra., Khanna Publishers

REFERENCES:

1. Performance and Design of D.C Machines – by Clayton & Hancock, BPB Publishers
2. Electrical Machines -S.K. Battacharya,
3. Electric Machines by I.J. Nagrath & D.P. Kothari, Tata Mc Graw – Hill Publishers, 3rd edition, 2004.

Syllabus for B. Tech. II Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EE04 CIRCUITS & NETWORKS- II

L	T	P/D	C
4	1	-	4

UNIT – I : THREE PHASE CIRCUITS:

Three phase circuits: Phase sequence – star and delta connection – Relation between line and phase voltages and currents in balanced systems – Analysis of balanced and unbalanced 3 phase circuits Measurement of active and reactive power.

UNIT – II : D.C.TRANSIENT AND A.C. TRANSIENT ANALYSIS:

Transient response of R- L, R-C, R-L-C circuits (Series and parallel combination) for D.C. excitation – Initial conditions- solution method using differential equation and lap lace transforms. Transient response of R- L, R-C, R-L-C circuits (Series and parallel combination) for sinusoidal excitations – Initial conditions- solution method using differential equation and lap lace transforms.

UNIT – III: NETWORK FUNCTIONS:

The concept of Complex Frequency, Physical Interpretation of Complex Frequency, Transform Impedance and Transform Circuits, Series and parallel combination of elements, Terminal pairs or Ports, Networks Functions for the One port and Two-port, poles and Zeros of Network Functions, Significance of poles and Zeros, Properties of Driving Point Functions, Properties of transfer Functions, Necessary conditions for Driving Point Functions, necessary conditions for transfer functions, Time Domain Response from pole Zero Plot.

UNIT – IV: NETWORK PARAMETERS – I :

Two port network parameters – Z, Y, ABCD and hybrid parameters and their relations. Cascaded networks, concept of transformed network – 2 port network parameters using transformed variables.

UNIT – V : FILTERS – I

Low pass, High pass, Band pass, Band elimination, Prototype filter design.

UNIT – VI : FOURIER ANALYSIS OF A.C. CIRCUITS:

The Fourier theorem, consideration of symmetry, exponential form of Fourier series, line spectra and phase angle spectra, Fourier integrals and Fourier transforms, properties of Fourier transforms.

TEXT BOOKS:

1. Electric circuits by A.Chankravarthy
2. Electric circuits by T.Nagasarkar, Oxford publications.

REFERENCES:

1. Electrical Circuit Analysis by William Hayt and Kemmerly
2. Circuit and Networks by A.Sudhakar and Shyam Mohan - TMC

Syllabus for B. Tech. II Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code:101EN73 FUNCTIONAL AND COMMUNICATIVE WRITTEN ENGLISH

L	T	P/D	C
-	-	2	2

COURSE DESCRIPTION

This course provides a platform to the learners to practice written communication to excel and sustain in the industry. It emphasizes on the techniques of collecting, organizing, and presenting the 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 this course, students will be equipped with:

1. Good written communication skills
2. Will perform all written tasks with clarity and coherence
3. Effective written employment communication
4. Report Writing and documentation skills
5. Become adept using electronic communication

UNIT I :**An introduction to Technical writing**

- **The writing process: an overview**
- **The process in practice**
- **Objectives in Technical Writing**

UNIT II :**Correspondence**

- **Memos**
- **Letters**
- **Résumé**

UNIT III :**Visual Appeal**

- **Document Design**
- **Graphics**
- **Three dimensional graphics**
- **Criteria for effective graphics**
- **Types of graphics**

UNIT IV :

Electronic Communication

- The Internet- The “Information Superhighway”
- The Internet – A Company’s Internal Web
- The Extranet – A Web within a Web

UNIT V:

Technical Applications

- **Technical Description**

- **Instructions and User’s Manuals**

UNIT VI:

Report Strategies

- **The Summary**

- **Reports**

- **Proposals**

TEXTBOOK:

1. Technical Writing: Process and Product by Sharon J Gerson; Fifth edition. Pearson Publishers.

REFERENCES:

1. Strategies for Engineering Communication: Stevenson Susan and Steve Whitmore: Wiley, India.
2. Technical Report Writing Today
3. How to build a better vocabulary –Nurnberg Maxwell & Morris Rosenblum: Grand Central Publishing
4. Six weeks to words of power –Funk Wilfred: W.R.Goyal Publishers & Distributors
5. Word power made easy – Norman Lewis
6. Norman Lewis, How to read better and faster: W.R.Goyal Publishers, New Delhi

Syllabus for B. Tech. II Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code:101EC71 ELECTRONIC DEVICES AND CIRCUITS LAB

L	T	P/D	C
-	-	3	2

PART A : (Only for viva voce Examination)**ELECTRONIC WORKSHOP PRACTICE (in 6 lab sessions) :**

1. Identification, Specifications, Testing of R, L, C Components (Colour Codes), Potentiometers, Switches (SPDT, DPDT, and DIP), Coils, Gang Condensers, Relays, Bread Boards.
2. Identification, Specifications and Testing of Active Devices, Diodes, BJTs, Low power JFETs, MOSFETs, Power Transistors, LEDs, LCDs, Optoelectronic Devices, SCR, UJT, DIACs, TRIACs, Linear and Digital ICs.
3. Soldering practice – Simple Circuits using active and passive components.
4. Single layer and Multi layer PCBs (Identification and Utility).
5. Study and operation of
 - Multimeters (Analog and Digital)
 - Function Generator
 - Regulated Power Supplies
6. Study and Operation of CRO:

CRO Varieties and Operations:

Oscilloscopes CRT features, vertical amplifiers, horizontal deflection system, sweep, trigger pulse, delay line, sync selector circuits, simple CRO, triggered sweep CRO, Dual beam CRO, Measurement of amplitude and frequency.

Dual trace oscilloscope, digital storage oscilloscope, Lissajous method of frequency measurement, standard specifications of CRO, probes for CRO- Active & Passive, attenuator type, Frequency counter, Time and Period measurement.

PART B : (For Laboratory examination – Minimum of 11 experiments)

1. PN Junction diode characteristics A. Forward bias B. Reverse bias.
2. Zener diode characteristics
3. Transistor CB characteristics (Input and Output)
4. Transistor CE characteristics (Input and Output)
5. Rectifier without filters (Full wave & Half wave)
6. Rectifier with filters (Full wave & Half wave)
7. FET characteristics
8. CE Amplifier
9. CC Amplifier (Emitter Follower).
10. FET amplifier (Common Source)
11. RC Phase Shift Oscillator
12. Feed back amplifier (Voltage Series).
13. Hartley Oscillator.

PART C:

Equipment required for Laboratories:

1. Regulated Power supplies (RPS) - 0-30v
2. CROs - 0-20M Hz.
3. Function Generators - 0-1 M Hz.
4. Multi meters
5. Decade Resistance Boxes/Rheostats
6. Decade Capacitance Boxes
7. Micro Ammeters (Analog or Digital) - 0-20 μ A, 0-50 μ A, 0-100 μ A, 0-200 μ A
8. Voltmeters (Analog or Digital) - 0-50V, 0-100V, 0-250V
Electronic Components -Resistors, Capacitors, BJTs, LCDs, SCRs, UJTs, FETs, LEDs, MOSFETs, Diodes (ge&sitype),atransistorsa(npn & pnp type).

Syllabus for B. Tech. II Year I semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EE71 ELECTRICAL CIRCUITS AND SIMULATION LAB

L	T	P/D	C
-	-	3	2

PART-A: ELECTRICAL CIRCUITS:

- 1) Thevenin's, Norton's and Maximum Power Transfer Theorems
- 2) Superposition theorem and RMS value of complex wave
- 3) Verification of Compensation Theorem
- 4) Reciprocity, Millmann's Theorems
- 5) Locus Diagrams of RL and RC Series Circuits
- 6) Series and Parallel Resonance
- 7) Determination of Self, Mutual Inductances and Coefficient of coupling
- 8) Z and Y Parameters
- 9) Transmission and hybrid parameters
- 10) Measurement of Active Power for Star and Delta connected balanced loads
- 11) Measurement of Reactive Power for Star and Delta connected balanced loads
- 12) Measurement of 3-phase Power by two Wattmeter Method for unbalanced loads

PART-B: PSPICE SIMULATION :

- 1) Simulation of DC Circuits
- 2) DC Transient response
- 3) Mesh Analysis
- 4) Nodal Analysis

NOTE:

- PSPICE Software Package is necessary.
- Eight experiments are to be conducted from PART-A and any Two from PART-B

Syllabus for B. Tech. II Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101CH03 ENVIRONMENTAL STUDIES
(Common to all branches)

L	T	P/D	C
3	1	-	3

UNIT I: ECOLOGY AND ECOSYSTEMS:

Component of nature, Definition, S Scope and importance, Eco system Definition and concept, Structure and function, Food chain and food web, Ecological pyramids, Biogeo chemical cycles, Ecological niche and succession, Classification (forest, grass land, desert, pond, river, marine, estuarine, wet lands). Environmental organizations (UNEP, WWF, IPCC, MOEN, TERI), Environmental activists- Sunderlal Bahuguna, Baba Amte, Anna Hazare, Medha Patkar, Arundathi Roy, AL Gore.

UNIT II: METAL IONS IN BIOLOGICAL SYSTEM:

Nitrogen Fixation, Oxygen transport (Hemo globin, Mayoglobin), Electron transfer reaction, Porphyrines(Chlorophyl), Metallo enzymes, photo system (PSI, PS II).

UNIT III: ENVIRONMENTAL CHEMISTRY:

Atmosphere definition, layers, state(weather and climate) acid rain, Green house effect, PAN, Smog, Preliminary concepts of climate change, Ozone layer depletion, Seasons in India, Monsoons, EI Nino, ENSO, Global warming, Kyoto protocol, Montreal Protocol, Carbon Trading, Hydrosphere-definition, Types (surface and ground water), Distribution, Water conservation, Use and over exploitation, Floods, Drought, dams-benefits and problems, Conflicts over water, Litho sphere- chemical composition of earth (core,montle,crust), Minerals resources- Environmental Effects of mining, Rocks and Soils, Plate tectonics.

UNIT IV: BIO DIVERSITY AND ITS CONSERVATION:

Introduction, Definition, Genetic species and Eco system diversity, Value of bio diversity, Hot spots, Threats to bio diversity, Conservation strategies: Insitu and Exsitu conservation, Biological Diversity Act 2002, Wild life Protection Act.

UNIT V: ENVIRONMENTAL POLLUTION:

Air pollution definition, causes, Effects and Control measures, Environment protection Act, Air (prevention and control of pollution) Act 1981, Case study: Bhopal gas tragedy, London Smog, Chernobyl disaster, Water pollution- Definition, types, Characteristics of domestic and industrial effluents-water quality parameters, BOD, COD, DO, Drinking Water treatment and Standards.

UNIT VI: POLLUTION CONTROL:

Waste water treatment, Case studies: Ganga water pollution, Mercury pollution- Minamatabay diseases, Water(prevention and control of pollution) Act 1974, Definition, Causes, Effect and Control measures: Soil pollution, Noise Pollution and Marine Pollution, Waste management- Solid waste Hazardous waste and E-Waste Management, Disaster Management Floods, Earth quakes and Cyclones.

TEXT BOOKS:

1. Introduction To Environmental Science –by Dr.Y.Anjaneyulu, B.S. Publications 2004.
2. Environmental Studies by Erach bharucha 2005, University grants commission, University press.

REFERENCES:

1. Environmental Sciences-A New Approach by Purohit, shammi and Agarwal, Agrobios (India) 2004.
2. Environmental Sciences-A Text book for Undergraduate by Dr. K.Mukkanti, S. Chand & Company Ltd., 2010.

Syllabus for B. Tech. II Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EE05 ELECTRICAL MACHINES-II

L	T	P/D	C
3	1	-	3

UNIT-I SINGLE PHASE TRANSFORMERS – CONSTRUCTION, OPERATION AND PERFORMANCE :

Single phase transformers-types - constructional details-minimization of hysteresis and eddy current losses-emf equation - operation on no load and on load - phasor diagrams- Equivalent circuit - losses and efficiency-regulation. All day efficiency - Effect of variations of frequency & supply voltage on iron losses

UNIT-II - TESTING OF SINGLE PHASE TRANSFORMER AND AUTOTRANSFORMER:

OC and SC tests - Sumpner's test - predetermination of efficiency and regulation-separation of losses test-parallel operation with equal and unequal voltage ratios - auto transformers-equivalent circuit - comparison with two winding transformers.

UNIT-III - POLYPHASE TRANSFORMERS:

Polyphase transformers - Polyphase connections - Y/Y, Y/ Δ , Δ /Y, Δ / Δ and open Δ , Third harmonics in phase voltages-three winding transformers-tertiary windings-determination of Z_p , Z_s and Z_t transients in switching - off load and on load tap changing; Scott connection.

UNIT- IV POLYPHASE INDUCTION MOTORS AND ITS CHARACTERISTICS:

Polyphase induction motors-construction details of cage and wound rotor machines-production of a rotating magnetic field - principle of operation - rotor emf and rotor frequency - rotor reactance, rotor current and pf at standstill and during operation- Rotor power input, rotor copper loss and mechanical power developed and their inter relation.

UNIT-V - TORQUE- SPEED CHARACTERISTICS AND CIRCLE DIAGRAM OF INDUCTION MOTORS:

Torque equation-deduction from torque equation- expressions for maximum torque and starting torque - torque slip characteristic- Double cage and deep bar rotors - crawling and cogging - equivalent circuit - phasor diagram-Circle diagram-no load and blocked rotor tests-predetermination of performance.

UNIT-VI METHODS OF STARTING AND SPEED CONTROL OF INDUCTION MOTOR:

Methods of starting and starting current and torque calculations-Speed control-change of frequency; change of poles and methods of consequent poles; cascade connection. injection of an emf into rotor circuit (qualitative treatment only)-induction generator-principle of operation.

TEXT BOOKS:

1. Electric machinery - A.E. Fitzgerald, C.Kingsley and S.Umans, Mc Graw Hill Companies, 5th edition
2. Electrical machines-PS Bhimbra, Khanna Publishers.

REFERENCES:

1. Performance and Design of AC Machines by MG.Say, BPB Publishers
2. Theory of Alternating Current Machinery- by Langsdorf, Tata McGraw-Hill Companies, 2nd edition.
3. Electric Machines –by I.J.Nagrath & D.P.Kothari,Tata Mc Graw Hill, 7th Edition.2005

**Syllabus for B. Tech. II Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EE06 POWER SYSTEMS-I**

L	T	P/D	C
3	1	-	3

UNIT-I TRANSMISSION LINE PARAMETERS:

Types of conductors - calculation of resistance for solid conductors - Calculation of inductance for single phase and three phase, single and double circuit lines, concept of GMR & GMD, symmetrical and asymmetrical conductor configuration with and without transposition, Numerical Problems. Calculation of capacitance for 2 wire and 3 wire systems, effect of ground on capacitance, capacitance calculations for symmetrical and asymmetrical single and three phase, single and double circuit lines, Numerical Problems.

UNIT-II PERFORMANCE OF SHORT, MEDIUM AND LONG LENGTH TRANSMISSION LINES:

Classification of Transmission Lines - Short, medium and long line and their model representations - Nominal-T, Nominal-Pie and A, B, C, D Constants for symmetrical & Asymmetrical Networks, Numerical Problems. Mathematical Solutions to estimate regulation and efficiency of all types of lines - Numerical Problems.

Long Transmission Line-Rigorous Solution, evaluation of A,B,C,D Constants, Interpretation of the Long Line Equations, Surge Impedance and SIL of Long Lines, Wave Length and Velocity of Propagation of Waves - Representation of Long Lines - Equivalent-T and Equivalent Pie network models (numerical problems).

UNIT – III- VARIOUS FACTORS GOVERNING THE PERFORMANCE OF TRANSMISSION LINE:

Skin and Proximity effects - Description and effect on Resistance of Solid Conductors -Ferranti effect - Charging Current - Effect on Regulation of the Transmission Line, Shunt Compensation. Corona - Description of the phenomenon, factors affecting corona, critical voltages and power loss, Radio Interference.

Power system transients:

Types of System Transients - Traveling or Propagation of Surges - Attenuation, Distortion, Reflection and Refraction Coefficients - Termination of lines with different types of conditions - Open Circuited Line, Short Circuited Line, T-Junction, Lumped Reactive Junctions (Numerical Problems). Bewley's Lattice Diagrams (for all the cases mentioned with numerical examples).

UNIT-IV OVERHEAD LINE INSULATORS:

Types of Insulators, String efficiency and Methods for improvement, Numerical Problems – voltage distribution, calculation of string efficiency, Capacitance grading and Static Shielding.

Sag and tension calculations:

Sag and Tension Calculations with equal and unequal heights of towers, Effect of Wind and Ice on weight of Conductor, Numerical Problems - Stringing chart and sag template and its applications.

UNIT-V UNDERGROUND CABLES:

Types of Cables, Construction, Types of Insulating materials, Calculations of Insulation resistance and stress in insulation, Numerical Problems. Capacitance of Single and 3-Core belted cables, Numerical Problems. Grading of Cables - Capacitance grading, Numerical Problems, Description of Inter-sheath grading.

UNIT-VI -GENERAL ASPECTS OF DISTRIBUTION SYSTEMS :

D.C. Distribution Systems

Classification of Distribution Systems - Comparison of DC vs AC and Under-Ground vs Over - Head Distribution Systems- Requirements and Design features of Distribution Systems-Voltage Drop Calculations (Numerical Problems) in D.C Distributors for the following cases: Radial D.C Distributor fed one end and at the both the ends (equal/unequal Voltages) and Ring Main Distributor.

A.C. Distribution Systems.

Voltage Drop Calculations (Numerical Problems) in A.C. Distributors for the following cases: Power Factors referred to receiving end voltage and with respect to respective load voltages.

TEXT BOOKS:

1. A Text Book on Power System Engineering by M.L.Soni, P.V.Gupta, U.S.Bhatnagar, A.Chakrabarthy, Dhanpat Rai & Co Pvt. Ltd.
2. Electrical power systems - by C.L.Wadhwa, New Age International (P) Limited, Publishers,1998.

REFERENCES:

1. Power system Analysis-by John J Grainger William D Stevenson, TMC Companies, 4th edition
2. Power System Analysis and Design by B.R.Gupta, Wheeler Publishing.
3. Power System Analysis by Hadi Saadat – TMH Edition..
4. Modern Power System Analysis by I.J.Nagaraj and D.P.Kothari, Tata McGraw Hill, 2nd Edition.

Syllabus for B. Tech. II Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EE07 CONTROL SYSTEMS

L	T	P/D	C
3	1	-	3

UNIT – I INTRODUCTION:

Concepts of Control Systems- Open Loop and closed loop control systems and their differences- Classification of control systems, Feed-Back Characteristics, Effects of feedback. Mathematical models – Differential equations, Impulse Response and transfer functions – Translational and Rotational mechanical systems

Transfer function representation:

Transfer Function of DC Servo motor - AC Servo motor- Synchro transmitter and Receiver, Block diagram representation of systems considering electrical systems as examples -Block diagram algebra – Representation by Signal flow graph - Reduction using Mason's gain formula.

UNIT-II TIME RESPONSE ANALYSIS:

Standard test signals - Time response of first order systems – Characteristic Equation of Feedback control systems, Transient response of second order systems - Time domain specifications – Steady state response - Steady state errors and error constants – Effects of proportional derivative, proportional integral systems, PID controllers.

UNIT – III STABILITY ANALYSIS IN S-DOMAIN :

The concept of stability – Routh's stability criterion – qualitative stability and conditional stability – limitations of Routh's stability.

Root Locus Technique: The root locus concept - construction of root loci-effects of adding poles and zeros to $G(s)H(s)$ on the root loci.

UNIT – IV FREQUENCY RESPONSE ANALYSIS:

Introduction, Frequency domain specifications-Bode diagrams-Determination of Frequency domain specifications and transfer function from the Bode Diagram-Phase margin and Gain margin-Stability Analysis from Bode Plots.

UNIT – V STABILITY ANALYSIS IN FREQUENCY DOMAIN :

Polar Plots-Nyquist Plots-Stability Analysis.

CLASSICAL CONTROL DESIGN TECHNIQUES: Compensation techniques – Lag, Lead, Lead-Lag Controllers design in frequency Domain.

UNIT – VI STATE SPACE ANALYSIS OF CONTINUOUS SYSTEMS:

Concepts of state, state variables and state model, derivation of state models from block diagrams, Diagonalization- Solving the Time invariant state Equations- State Transition Matrix and it's Properties – Concepts of Controllability and Operability

TEXT BOOKS:

1. Automatic Control Systems 8th edition– by B. C. Kuo 2003– John wiley and son's.,
2. Control Systems Engineering – by I. J. Nagrath and M. Gopal, New Age International (P) Limited, Publishers, 2nd edition.

REFERENCES:

1. Modern Control Engineering – by Katsuhiko Ogata – Prentice Hall of India Pvt. Ltd., 3rd edition, 1998.
2. Control Systems by N.K.Sinha, New Age International (P) Limited Publishers, 3rd Edition, 1998.
3. Control Systems Engg. by NISE 3rd Edition – John wiley
4. "Modeling & Control Of Dynamic Systems" by Narciso F. Macia George J. Thaler, Thomson Publishers.

**Syllabus for B. Tech. II Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING**

Code: 101EC33 ELECTRONIC CIRCUITS

L	T	P/D	C
3	1	-	3

UNIT – I – SINGLE STATE AMPLIFIERS DESIGN AND ANALYSIS AND LINEAR WAVE SHAPING:

Review of CE, CB, CC & CS amplifiers- classification of Amplifiers, Distortion in amplifiers – Approximate analysis, CE, CB, CC amplifiers comparison.

Linear Wave shaping: high pass, low pass RC circuits, their response for sinusoidal, step, pulse, square, ramp inputs.

UNIT – II – BJT & FET FREQUENCY RESPONSE:

Logarithms- decibels – General Frequency consideration – Low frequency analysis – Low frequency response of BJT amplifiers- low frequency response of FET amplifier – Miller effect capacitance – High frequency response BJT amplifier –square wave testing.

UNIT – III- AMPLIFIERS:

Feed back amplifiers: Concept of feedback, classification of feedback amplifiers, General characteristics of negative feedback amplifiers, Effect of Feedback on Amplifier characteristics, voltage series shunt, current series and current shunt feedback configuration, simple problems.

Large signal amplifiers: Class, A power amplifier, Maximum Value of efficiency of Class – A amplifier, Transformer couple amplifier, Push Pull Amplifier, complimentary symmetry circuits (Transformer Less class B Power Amplifier), Phase inverters, Transistor Power Dissipation, Thermal Runway, Heat sinks.

UNIT – IV – OSCILLATORS AND MULTI VIBRATORS:

Conditions for oscillations, RC and LC type Oscillators, Crystal oscillators, Frequency and amplitude stability of oscillators, Generalized analysis of LC oscillators, Quartz, Hartley, and Colpitts Oscillators, RC-Phase shift and Wien-bridge oscillators. Analysis and Design of Bistable, Monostable, A stable Multi vibrators and Schmitt trigger using transistors.

UNIT – V : CLIPPERS AND CLAMPERS:

Diode clippers- Transistor clippers- clipping at two independent levels, Transfer characteristics of clippers, Emitter coupled clipper- comparators, Applications of voltage comparators, Clamping operation, clamping circuits with different inputs, clamping circuit theorem, practical clamping circuits, effect of diode characteristics on clamping voltage, transfer characteristics of clampers.

UNIT – VI – SWITCHING CHARACTERISTICS OF DEVICES:

Diode as a switch, piecewise linear diode characteristics, Transistor as a switch, Break down voltage consideration of transistor, saturation parameters of transistors and their variation with temperature, design of transistor switch, transistor , Switching times.

TEXT BOOKS:

1. Electronic Devices and Circuit Theory, Robert L. Boylestad, Louis Nasheisky, 9th Edition 2007, Pearson Education.
2. Solid State Circuits by David A.Bell 4th Edition, Prentice Hall of India.

REFERENCES:

1. Introductory Electronic Devices and Circuits (Conventional Flow version) Robert T.Paynter, 7th Edition, 2009, PEI
2. Electronic Devices and Circuits, Ani K.Maini, Varsha Agarwal, 1st Edition, Wiley.

Syllabus for B. Tech. II Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101ME04 BASIC MECHANICAL ENGINEERING

L	T	P/D	C
3	1	-	3

UNIT – I – THERMODYNAMICS:

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

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

UNIT – II - STEAM GENERATORS:

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

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

UNIT – III - REFRIGERATION AND AIR CONDITIONING:

Definition, Refrigeration and Air conditioning, Schematic and description of vapour compression refrigeration and vapour absorption systems, Domestic Refrigerator, Summer and winter air conditioning systems.

UNIT – IV - HYDRAULIC PUMPS AND TURBINES:

Reciprocating and centrifugal pumps and their applications.

Layout of Hydro-electric power plant, Classification of water 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 and their characteristics, advantages, limitations and applications.

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

UNIT – VI - MECHANICAL WORKING OF METALS:

Hot working and cold working processes, Press working, differences, basic processes and their 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. II Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EN74 EFFECTIVE ENGLISH COMMUNICATION
AND SOFT SKILLS

L	T	P/D	C
-	-	2	2

Course Description

This course empowers the students for career opportunities, thus 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. The soft skills training 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 each 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.
- Conduct effective business correspondence and prepare business reports which produce results.
- 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.
- Take part effectively in various selection procedures adopted by the recruiters.

UNIT – I

Soft Skills

Unit –II

Body Language

Unit –III

Group Discussion

UNIT – IV

Interview Skills

UNIT – V

Etiquette and Manners

UNIT – VI

Developing Positive Attitude

Prescribed Text:

1. 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. Funk Wilfred-Six Weeks to Words of Power: W.R. Goyal Publishers & Distributors.
5. Body Language – Your success Mantra by Shalini Verma, S Chand, 2006

**Syllabus for B. Tech. II Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EE73 ELECTRICAL MACHINES LAB – I**

L	T	P/D	C
-	-	3	2

The following experiments are required to be conducted compulsory experiments:

1. Magnetization characteristics of DC shunt generator. Determination of critical field resistance and critical speed.
2. Load test on DC shunt generator. Determination of characteristics.
3. Load test on DC series generator. Determination of characteristics.
4. Load test on DC compound generator. Determination of characteristics.
5. Hopkinson's test on DC shunt machines. Predetermination of efficiency.
6. Fields test on DC series machines. Determination of efficiency.
7. Swinburne's test and speed control of DC shunt motor. Predetermination of efficiencies.
8. Brake test on DC compound motor. Determination of performance curves.

In addition to the above eight experiments, at least any two of the experiments from the following list are required to be conducted:

9. Brake test on DC shunt motor. Determination of performance curves.
10. Retardation test on DC shunt motor. Determination of losses at rated speed.
11. Separation of losses in DC shunt motor.

**Syllabus for B. Tech. II Year II semester
ELECTRICAL & ELECTRONICS ENGINEERING
Code: 101EC85 ELECTRONIC CIRCUITS LAB**

L	T	P/D	C
-	-	3	2

Minimum ten experiments to be conducted:

1. Linear wave shaping.
2. Non Linear wave shaping – Clippers.
3. Non Linear wave shaping – Clampers.
4. Transistor as a switch.
5. Wien Bridge Oscillator using Transistors
6. RC Phase Shift Oscillator using Transistors
7. Astable Multivibrator.
8. Monostable Multivibrator.
9. Bistable Multivibrator.
10. Schmitt Trigger.
11. Common Emitter and Common Source amplifier
12. Current shunt and Feedback Amplifier
13. Class A Power Amplifier (Transformer less)
14. Class B Complementary Symmetry Amplifier

Equipment required for Laboratories:

- | | | |
|------------------------|---|--------------|
| 1. RPS | - | 0 – 30 V |
| 2. CRO | - | 0 – 20 M Hz. |
| 3. Function Generators | - | 0 – 1 M Hz |
| 4. Components | | |
| 5. Multi Meters | | |

COURSE STRUCTURE AND DETAILED SYLLABUS

for

B.Tech – III and IV Year

in

ELECTRICAL AND ELECTRONICS ENGINEERING

(Applicable from the Academic Year 2010-2011)



SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(An Autonomous Institution approved by UGC and affiliated to JNTUH)
Yamnapet, Ghatkesar, R.R.District-501 301.

III Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101MB01	Managerial Economics and Financial Analysis	3	1	---	3	30	70
2	101EC13	Linear and Digital ICs	3	1	---	3	30	70
3	101EM03	Computer Organization	3	1	--	3	30	70
4	101EE08	Electrical Machines – III	3	1	--	3	30	70
5	101EE09	Power Electronics	3	1	--	3	30	70
6	101EE10	Power Systems – II	3	1	--	3	30	70
7	101MA72	Quantitative Aptitude	---	--	3	2	25	50
8	101EE74	Group Project	--	--	3	1	25	50
9	101EC73	Linear and Digital IC Applications Lab	--	--	3	2	25	50
10	101EE75	Control Systems Lab	--	--	3	2	25	50
Total			18	6	12	25	280	620

III Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101MB02	Management Science	3	1	--	3	30	70
2	101EM05	Microprocessor & Microcontrollers	3	1	--	3	30	70
3	101EE11	Power Systems – III	4	---	---	4	30	70
4	101EE12	Measurements & Instrumentation	3	1	--	3	30	70
5	101EE13	Power Semi Conductor Drives	3	1	--	3	30	70
6		Open Elective – I	2	2	--	2	30	70
7	101MA71	Logical Reasoning - 1	---	--	2	2	25	50
8	101EE76	Comprehensive Viva-II	--	--	--	1	--	50
9	101EE77	Electrical Machines Lab – II	--	--	3	2	25	50
10	101EE78	Power Electronics Lab	--	--	3	2	25	50
Total			18	6	8	25	255	620

Open Elective – I

101FL01	Basic Spanish Language
101FL02	Basic French Language
101FL03	Basic German Language
101EC10	Probability Theory And Stochastic Process
101EC08	Signals And Systems

***Industry Oriented Mini Project will be conducted by all students in summer vacation of III / IV B.Tech, II – Semester for a period of One Month. The report must be submitted in IV / IV B.Tech I –Semester and will have to be defended. Marks allotted are “75” and Two Credits are provided.

IV Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							INT	EXT
1	101EE14	Power Station Practice	3	1	--	3	30	70
2	101EE15	Non conventional Sources of Energy	4	--	--	4	30	70
3		Professional Elective – I	3	1	--	3	30	70
4		Professional Elective – II	3	1	--	3	30	70
5		Open Elective – II	3	--	--	3	30	70
6	101MA73	Logical Reasoning – II	--	--	2	2	25	50
7	101EE79	Pre Project Seminar	--	--	--	2	50	--
8	101EE80	Industry Oriented Mini Project	--	--	--	2	25	50
9	101EE81	Electrical workshop	--	--	3	2	25	50
10	101EM71	Microprocessor & Microcontrollers Lab	--	--	3	2	25	50
11	101EE82	Measurements & Instrumentation Lab	--	--	3	2	25	50
Total			16	3	11	28	325	600

Professional Elective –I

101EE16	Utilization of Electrical Energy
101EE17	High Voltage Engineering
101EC15	Digital Signal Processing

Profession Elective – II

101EE18	Optimization Techniques
101IT03	Data Base Management Systems
101IT10	Neural Networks & Fuzzy Logic

Open Elective – II

101MB56	Banking Operations, Insurance and Risk Management
101CS03	OOPS through Java
101EM01	Discrete Structures And Graph Theory
101EM07	VLSI Design
101EM06	Embedded And Real Time Systems
101	One or two more electives shall be chosen based on skills in demand in the industry

IV Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101EC34	Communication Theory	4	---	---	4	30	70
2		Professional Elective – III	4	---	---	4	30	70
3	101EE83	Project	---	---	---	10	50	150
4	101EE84	Comprehensive Viva	---	---	---	2	---	50
5	101EE85	Technical Seminar	---	---	---	2	25	---
Total			8	---	---	22	135	340

Professional Elective – III

101EE19	Flexible AC Transmission Systems
101EE20	Electrical Distribution Systems
101EE21	High Voltage DC Transmission

L - Lectures; **T** - Tutorial; **P/D** - Practical / Drawing; **C** - Credit

III year B.Tech – I Sem**Code: 101MB01 MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS**

L	T	P	C
3	1	-	3

UNIT – I: INTRODUCTION TO MANAGERIAL ECONOMICS:

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

UNIT – II: THEORY OF PRODUCTION AND COST ANALYSIS:

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

UNIT – III: INTRODUCTION TO MARKETS:

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

UNIT – IV: FUNDAMENTALS OF FINANCIAL ACCOUNTING:

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

UNIT – V: CAPITAL BUDGETING TECHNIQUES:

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

UNIT – VI: RATIO ANALYSIS:

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

REFERENCES:

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

	III year B.Tech – I Sem			
Code: 101EC13	LINEAR AND DIGITAL IC APPLICATIONS			
	L	T	P	C
	3	1		3

UNIT-I OP-AMPS:

Differential Amplifier and its characteristics, Characteristics of OP-Amps, Integrated circuits-Types, Classification, Package Types and temperature ranges, Power supplies, Op-amp Block Diagram, ideal and practical Op-amp specifications, DC and AC characteristics, 741 op-amp & its features, Op-Amp parameters & Measurement, Input & Out put Off set voltages & currents, slew rates, CMRR, PSRR, drift, Frequency Compensation technique.

UNIT-II APPLICATIONS OF OP- AMPS:

Inverting and Non-inverting amplifier, Integrator and differentiator, Difference amplifier, Instrumentation amplifier, AC amplifier, V to I, I to V converters, Buffers.

Non-Linear Applications of Op- Amps: Non- Linear function generation, Comparators, Multi vibrators, Triangular and Square wave generators, Log and Anti log amplifiers, Precision rectifiers.

UNIT-III OSCILLATORS:

Introduction, Butter worth filters, 1st order, 2nd order LPF, HPF filters. Band pass, Band reject and all pass filters. Applications of VCO (566).

Timers & Phase Locked Loops: Introduction to 555 timer, Functional diagram, Monostable and Astable operations and applications, Schmitt Trigger. Phase Locked Loop.

UNIT-IV D to A & A to D CONVERTERS:

Introduction, basic DAC techniques, Weighted resistor DAC, R-2R ladder DAC, Inverted R-2R DAC, and IC 1408 DAC, Different types of ADCs - Parallel comparator type ADC, Counter type ADC, Successive approximation ADC and dual slope ADC. DAC and ADC Specifications, Specifications AD 574 (12 bit ADC).

UNIT-V LOGIC FAMILIES:

Introduction to logic families, CMOS logic, CMOS steady state electrical behavior, CMOS dynamic electrical behavior, CMOS logic families. Bipolar logic, Transistor logic, TTL families, CMOS/TTL interfacing, low voltage CMOS logic and interfacing, Emitter coupled logic, Comparison of logic families.

UNIT-VI MEMORIES ROMs:

Internal structure, 2D-decoding commercial types, Timing and applications. Static RAM: Internal structure, SRAM timing, Standard SRAMS, Synchronous SRAMS. Dynamic RAM: Internal structure, Timing, Synchronous DRAMS.

TEXT BOOKS:

1. Linear Integrated Circuits – D. Roy Chowdhury, New Age International (p) Ltd, 2nd Edition, 2003.
2. Op-Amps & Linear ICs – Ramakanth A. Gayakwad, PHI, 1987.
3. Digital Design Principles & Practices – John F. Wakerly, PHI/ Pearson Education Asia, 3rd Edition, 2005.

REFERENCES:

1. Design with Operational Amplifiers & Analog Integrated Circuits – Sergio Franco, McGraw Hill, 1988.
2. Operational Amplifiers & Linear Integrated Circuits – R.F.Coughlin & Fredrick Driscoll, PHI, 6th Edition.
3. Micro Electronics – Millman, McGraw Hill, 1988.
4. Operational Amplifiers – C.G. Clayton, Butterworth & Company Publ. Ltd./ Elsevier, 1971.
5. Linear Integrated Circuit Applications – K. Lal kishore, Pearson Educations, 2005.

Code: 101EC13	III year B.Tech – I Sem			
	COMPUTER ORGANIZATION			
	L	T	P	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 Micro operations, logic micro operations, shift micro operations, Arithmetic logic shift unit. Instruction codes. Computer Registers Computer instructions – Instruction cycle. memory – Reference Instructions. Input – Output and Interrupt. STACK organization. Instruction formats. Addressing modes. DATA Transfer and manipulation. Program control. Reduced Instruction set computer.

UNIT – III CONTROL UNIT DESIGN:

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

Code: 101EE08	III year B.Tech – I Sem			
	ELECTRICAL MACHINES - III			
	L	T	P	C
	3	1	-	3

OBJECTIVE:

This subject is an extension of previous machines courses. It deals with the detailed analysis of Synchronous generators and motors which are the prime source of electrical power generation and its utilities. Also concerns about the different types of single phase motors which are having significant applications in house hold appliances and control systems.

UNIT – I CONSTRUCTION AND PRINCIPLE OF OPERATION OF SYNCHRONOUS GENERATOR:

Constructional Features, Armature windings, Integral slot and fractional slot windings, Distributed and concentrated windings, Distribution, Pitch and winding factors, E.M.F Equation.

UNIT-II SYNCHRONOUS GENERATOR CHARACTERISTICS:

Harmonics in generated e.m.f., Suppression of harmonics, Armature reaction, Leakage reactance, Synchronous reactance and impedance, Experimental determination, Phasor diagram, Load characteristics.

UNIT – III REGULATION OF SYNCHRONOUS GENERATOR:

Regulation by synchronous impedance method, M.M.F. method, Z.P.F. method and A.S.A. methods, Salient pole alternators, Two reaction analysis, Experimental determination of X_d and X_q (Slip test) Phasor diagrams, Regulation of salient pole alternators.

UNIT – IV PARALLEL OPERATION OF SYNCHRONOUS GENERATOR:

Synchronizing alternators with infinite bus bars, synchronizing power torque, parallel operation and load sharing, Effect of change of excitation and mechanical power input. Analysis of short circuit current wave form, Determination of sub-transient, Transient and steady state reactance's.

UNIT – V SYNCHRONOUS MOTORS:

Principal of operation, Phasor diagram, Power flow equation, Variation of current and power factor with excitation, Power circles, Synchronous condenser, Hunting and its suppression, Methods of starting.

UNIT – VI SINGLE PHASE AND SPECIAL MOTORS:

Single phase induction motor, constructional features, double revolving field theory, elementary idea of cross, Field theory, Split-phase motors, Shaded pole motor. Principle & performance of A.C. Series motor, Universal motor, Stepper motor and reluctance motor.

Text Books

1. Electric Machines –I.J.Nagrath & D.P.Kothari, Tata Mc Graw-Hill Publishers, 7th Edition .
2. Electrical Machines - P.S. Bimbra, Khanna Publishers.

Reference Books:

1. The Performance and Design of A.C.Machines – M.G.Say, ELBS and Ptiman & Sons.
2. Electric Machinery – A.E. Fitzgerald, C.Kingsley and S.Umans, Mc Graw-Hill Companies, 5th edition.
3. Theory of Alternating Current Machinery - Langsdorf, Tata Mc Graw-Hill, 2nd edition.
4. Electromechanics-III (Synchronous and single phase machines) -S.Kamakashiah, Right Publishers.

Code: 101EE09 **III year B.Tech – I Sem**
POWER ELECTRONICS

L	T	P	C
3	1	-	3

OBJECTIVE:

With the advent of semiconductor devices, Revolution is taking place in the power transmission distribution and utilization. This course introduces the basic concepts of power semiconductor devices, Converters and choppers and their analysis.

UNIT – I POWER SEMI CONDUCTOR DEVICES:

Thyristors, Silicon Controlled Rectifiers (SCR's), BJT, Power MOSFET, Power IGBT, DIAC, TRIAC, GTO and their characteristics. Basic theory of operation of SCR, Static characteristics, Turn on and turn off methods, Dynamic characteristics of SCR, Turn on and Turn off times, Salient points.

UNIT – II DEVICES AND COMMUTATION CIRCUITS:

Two transistor analogy, SCR, UJT firing circuit, Series and parallel connections of SCR's, Snubber circuit details, Specifications and Ratings of SCR's, BJT, IGBT.

UNIT – III SINGLE PHASE AND THREE PHASE CONTROLLED CONVERTERS:

Phase control technique, Single Phase Line commutated converters, Mid point and Bridge connections, Half controlled and Fully controlled converters, Derivation of average load voltage and current with R and RL loads, Three phase half controlled and fully controlled bridge converters with R and RL loads, Effect of Source inductance, Waveforms, Numerical Problems.

UNIT –IV AC VOLTAGE CONTROLLERS & CYCLO CONVERTERS:

AC voltage controllers, Single phase two SCR's in anti parallel with R and RL loads, Derivation of RMS load voltage, current and power factor wave forms, Firing circuits, Numerical problems, Cyclo converters, Single phase mid point cyclo converters with Resistive and inductive load (Principle of operation only), Bridge configuration of single phase cyclo converter (Principle of operation only), Waveforms

UNIT – V CHOPPERS:

Choppers, Time ratio control and Current limit control strategies, Step down choppers Derivation of load voltage and currents with R, RL and RLE loads, Step up Chopper, load voltage expression Morgan's chopper, Jones chopper and waveforms, AC Chopper, Problems.

UNIT – VI INVERTERS:

Inverters, Single phase inverter, Basic series inverter, Basic parallel Capacitor inverter bridge inverter, Waveforms, Simple forced commutation circuits for bridge inverters, Voltage control techniques for inverters, Pulse width modulation techniques (Multiple Pulse and Sinusoidal), Numerical problems.

TEXT BOOKS:

1. Power Electronics - M. D. Singh & K. B. Kanchandhani, Tata Mc Graw Hill Publishing Company.
2. Power Electronics Circuits, Devices and Applications - M. H. Rashid, Prentice Hall of India, 2nd edition.

REFERENCE BOOKS:

1. Power Electronics - Vedam Subramanyam, New Age International (P) Limited, Publishers.
2. Power Electronics - V.R.Murthy 1st edition, OXFORD University Press.
3. Power Electronics - P.C.Sen, Tata Mc Graw Hill Publishing.
4. Thyristorised Power Controllers - G. K. Dubey, S. R. Doradra, A. Joshi and R. M. K. Sinha, New Age International (P) Limited Publishers.
5. Power Electronics - P.S.Bimbhra, Khanna Publishers.

Protection of Lines, Over Current, Carrier Current and Three-zone distance relay protection using Impedance relays. Translay Relay. Protection of Bus bars, Differential protection.

UNIT – V PROTECTION AGAINST OVER VOLTAGES:

Generation of Over Voltages in Power Systems, Protection against Lightning Over Voltages ,Valve type and Zinc-Oxide Lighting Arresters, Insulation Coordination -BIL, Impulse Ratio, Standard Impulse Test Wave, Volt-Time Characteristics.

UNIT-VI NEUTRAL GROUNDING:

Grounded and Ungrounded Neutral Systems, Effects of Ungrounded Neutral on system performance.

Methods of Neutral Grounding, Solid, Resistance, Reactance, Arcing Grounds.

TEXT BOOKS:

1. Switchgear and Protection – Sunil S Rao, Khanna Publishers.
2. Power System Protection and Switchgear – Badri Ram, D.N Viswakarma, TMH Publications.

REFERENCE BOOKS:

1. Fundamentals of Power System Protection –Paithankar and S.R.Bhide.,PHI.
2. Art & Science of Protective Relaying – C R Mason, Wiley Eastern Ltd.
3. Electrical Power Systems – C.L.Wadhwa, New Age international (P) Limited, Publishers, 3rd edition.
4. A Text book on Power System Engineering – B.L.Soni, Gupta, Bhatnagar, Chakrabarthy, Dhanpat Rai & Co.

Code: 101MA72	III year B.Tech – I Sem			
	QUANTITATIVE APTITUDE			
	L	T	P	C
	-	-	2	2

UNIT I

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

UNIT II

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

UNIT III

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

UNIT IV

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

UNIT V

Mensuration: Area of Plane Figures, Volume and Surface Area of Solid Figures .

UNIT VI

Data Interpretation: Tabulation, Bar Graphs, Pie Charts, Line Graphs.

TEXT BOOKS

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

Code: 101EC73

III year B.Tech – I Sem
LINEAR AND DIGITAL IC APPLICATIONS LAB

L	T	P	C
		3	2

Part A (IC Application Lab):

1. OP AMP Applications – Adder, Subtractor, Comparator Circuits.
2. Active Filter Applications – LPF, HPF (first order)
3. Function Generator using OP AMPs.
4. IC 555 Timer – Monostable and Astable Operation Circuit.
5. IC 566 – VCO Applications.
6. Voltage Regulator using IC 723.
7. 4 bit DAC using OP AMP.

Part B (Digital IC Applications Lab):

Simulate the internal structure of the following Digital IC's using VHDL / VERILOG and verify the operations of the Digital IC's (Hardware) in the Laboratory

1. D Flip-Flop 7474
2. Decade counter-7490
3. shift registers-7495 7
4. 3-8 Decoder -74138
5. 4 bit Comparator-7485
6. 8 x 1 Multiplexer -74151 and 2x4 Demultiplexer-74155
7. RAM (16x4)-74189 (Read and Write operations)

Equipment required for Laboratories:

1. RPS
2. CRO
3. Function Generator
4. Multi Meters
5. IC Trainer Kits (Optional)
6. Bread Boards
7. Components:- IC741, IC555, IC566, IC1496, IC723, 7805, 7809, 7912 and other essential components.
8. Analog IC Tester

For Software Simulation

- 1 Computer Systems
- 2 LAN Connections (Optional)
- 3 Operating Systems
- 4 VHDL/ VERILOG
- 5 FPGAS/CPLDS (Download Tools)

III year B.Tech – I Sem
CONTROL SYSTEMS AND SIMULATION LAB

L	T	P	C
		3	2

Any Eight of the following experiments are to be conducted:

1. Time response of Second order system
2. Characteristics of Synchronos
3. Programmable logic controller – Study and verification of truth tables of logic gates, simple Boolean expressions and application of speed control of motor.
4. Effect of feedback on DC servo motor
5. Transfer function of DC motor
6. Effect of P, PD, PI, PID Controller on a second order systems
7. Lag and lead compensation – Magnitude and phase plot
8. Transfer function of DC generator
9. Temperature controller using PID
10. Characteristics of magnetic amplifiers
11. Characteristics of AC servo motor

Any two simulation experiments are to be conducted:-

1. PSPICE simulation of Op-Amp based Integrator and Differentiator circuits.
2. Linear system analysis (Time domain analysis, Error analysis) using MATLAB.
3. Stability analysis (Bode, Root Locus, Nyquist) of Linear Time Invariant system using MATLAB
4. State space model for classical transfer function using MATLAB – Verification.

REFERENCE BOOKS:

1. Simulation of Electrical and electronics Circuits using PSPICE –M.H.Rashid, M/s PHI Publications.
2. PSPICE A/D user's manual – Microsim, USA.
3. PSPICE reference guide – Microsim, USA.
4. MATLAB and its Tool Books user's manual and – Mathworks, USA.

	III year B.Tech – II Sem			
Code: 101MB02	MANAGEMENT SCIENCE			
	L	T	P	C
3	-	3	-	1

UNIT – I: INTRODUCTION TO MANAGEMENT:

Management- Definitions, Levels of Management, functions of management Planning: types of planning, planning process; Organizing: Organizational Design and structure, staffing; Directing; Maslow's Motivational theory, Leadership styles, Controlling: Basic control process.

UNIT – II: INTRODUCTION TO OPERATIONS MANAGEMENT:

Plant Location, plant layout, types of production, Work Study, Method study and Work Measurement, Basic Procedures, Project Management: Network Analysis - Programme Evaluation and Review Techniques, Critical Path Method, Crashing of Simple Networks.

UNIT – III: MATERIALS MANAGEMENT:

Objectives of Materials, Need for Inventory Control, Economic Order Quantity, ABC Analysis, Inventory Control Systems, Just In Time, Introduction to LSCM, Quality Control Techniques – Inspection, ISO standards, Six Sigma.

UNIT - IV:

(i) Human Resources Management: Objectives of HRM, Challenges of HRM, HR Planning process, HR functions and policies – Recruitment, Selection, Training and Development, Performance Appraisal, Assessment of HR requirements.

(ii) Marketing Management: Concept of Marketing, Functions, Marketing Mix, Product Life Cycle, Marketing Strategies, Channels of Distribution, Differences between products and services

UNIT – V: INTRODUCTION TO ORGANIZATIONAL BEHAVIOUR:

Definition, Nature and Scope, Perception – Perceptual selectivity and organization, Personality and Attitudes - Personality as a continuum – Meaning of personality, Communication – types - interactive communication in organizations –barriers to communication and strategies to improve the follow of communication.

UNIT - VI: STRATEGY AND MANAGEMENT CONTROL SYSTEM:

Concepts in Strategic Management, Vision, Mission, Objectives, SWOT Analysis, Concept of Strategic Planning, Competitive Advantage, Concept of Core Competence. An overview, Process and its Implementation, Target Setting, Balanced Score Card, Management Control in Empowered Organization – Conflict between Creativity and Control.

REFERENCES:

- 1 Dr. Y. Satyanarayana: Management control systems in competitive environment, Icfai books.
2. A R Aryasri: Management Science, Tata Mc Graw Hill
3. Koontz & Weihrich: Essentials of Management, 6/e, TMH, 2005

4. Kotler Philip & Keller Kevin Lane: Market Management 12/e, PHI, 2005
5. Strategic Management, Text and Cases, VSP Rao, V Hari Krishna
6. Thomas N Duening & John M. Ivancevich Management – Principles and Guidelines, Biztantra, 2003.

III year B.Tech – II Sem
Code: 101EM05 MICROPROCESSORS AND MICROCONTROLLERS

L	T	P	C
3	1	-	3

UNIT – I -8086 ARCHITECTURE

An over view of 8085, Architecture of 8086 Microprocessor. Special functions of General purpose registers. 8086 flag register and function of 8086 Flags. Addressing modes of 8086. Instruction set of 8086. Assembler directives, simple programs, procedures, and macros.

UNIT- II-Assembly language programming and Hardware features of 8086

Assembly language programs involving logical, Branch & Call instructions, sorting, evaluation of arithmetic expressions, string manipulation. Pin diagram of 8086-Minimum mode and maximum mode of operation. Timing diagram. Memory interfacing to 8086 (Static RAM & EPROM).

UNIT – III I/O interfacing

8255 PPI – various modes of operation and interfacing to 8086. D/A and A/D converter interfacing. Interfacing Keyboard, Displays, Stepper Motor and control of high power devices.

UNIT – IV-Interrupts and serial data communication devices and interfacing

Interrupt structure of 8086. Vector interrupt table. Interrupt service routines. Introduction to DOS and BIOS interrupts. 8259 PIC Architecture and interfacing. Serial Data Communication. 8251 USART Architecture and interfacing RS.232.

UNIT – V-THE 8051 ARCHITECTURE & Programming :

Introduction, 8051 Micro controller Hardware, Input/Output Ports and Circuits, External Memory, Addressing modes, The Assembly Language programming- Data Transfer and Logical Instructions. Arithmetic Operations, Decimal Arithmetic. Jump and Call Instructions

UNIT – VI-8051 Interrupts communication & industrial applications

Counter and Timers, Serial data communication, Interrupts and programming. Industrial applications: Interfacing 8051 to LED, push button, Relay, Solid state relay, DC motor and PWM, Seven Segment display, ADC and DAC ,keyboard interfacing.

TEXT BOOKS:

1. Advanced microprocessor and Peripherals - A.K.Ray and K.M.Bhurchandi, TMH, 2000.
2. Microprocessors and interfacing – Douglas V. Hall, TMH, 2nd Edition, 1999.
3. 8051 Microcontroller – Kenneth J. Ayala, Penram International/ Thomson, 3rd Edition, 2005.

REFERENCES:

1. Micro computer systems, The 8086/8088 Family Architecture, Programming and Design – Y.Liu and G.A. Gibson, PHI, 2nd Edition.
2. 8051 Micro Controllers and Embedded Systems – Dr. Rajiv Kapadia, Jaico Publishers.

Code: 101EE11	III year B.Tech – II Sem			
	POWER SYSTEMS - III			
	L	T	P	C
	4			4

OBJECTIVE:

This subject deals with Economic operation of Power Systems, Hydrothermal scheduling and modeling of turbines, generators and automatic controllers. It emphasizes on single area and two area load frequency control and reactive power control.

UNIT -I POWER SYSTEM NETWORK MATRICES:

Graph Theory: Definitions, Bus Incidence Matrix, Ybus formation by Direct and Singular Transformation Methods, Numerical Problems.

FORMATION OF Z_{BUS} : Partial network, Algorithm for the Modification of ZBus Matrix for addition element for the following cases: Addition of element from a new bus to reference, Addition of element from a new bus to an old bus, Addition of element between an old bus to reference and Addition of element between two old busses (Derivations and Numerical Problems), Modification of ZBus for the changes in network (Problems).

UNIT –II MODELLING OF TURBINE, GENERATOR AND AUTOMATIC CONTROLLERS:

Modeling of Turbine, First order Turbine model, Block Diagram representation of Steam Turbines and Approximate Linear Models. Modeling of Generator (Steady State and Transient Models), Description of Simplified Network Model of a Synchronous Machine (Classical Model), Description of Swing Equation (No Derivation) and State-Space II-Order Mathematical Model of Synchronous Machine. Modeling of Governor, Mathematical Modeling of Speed Governing System, Derivation of small signal transfer function. Modeling of Excitation System, Fundamental Characteristics of an Excitation system, Transfer function, Block Diagram Representation of IEEE Type-1 Model.

UNIT – III LOAD FREQUENCY CONTROL:

Necessity of keeping frequency constant. Definitions of Control area, Single area control, Block diagram representation of an isolated power system, Steady state analysis, Dynamic response, uncontrolled case.

Load frequency control of 2-area system, uncontrolled case and controlled case, tie-line bias control.

Proportional plus Integral control of single area and its block diagram representation, steady state response, Load Frequency Control and Economic dispatch control.

UNIT –IV POWER FLOW STUDIES:

Necessity of Power Flow Studies, Data for Power Flow Studies, Derivation of Static load flow equations, Load flow solutions using Gauss Seidel Method, Acceleration Factor, Load flow solution with and without P-V buses, Algorithm and Flowchart. Numerical Load flow Solution for Simple Power Systems (Max. 3-Buses), Determination of Bus Voltages, Injected Active and Reactive Powers (Sample One Iteration only) and finding Line Flows/Losses for the given Bus Voltages.

Newton Raphson Method in Rectangular and Polar Co-Ordinates Form, Load Flow Solution with or without PV Busses, Derivation of Jacobian Elements, Algorithm and Flowchart. Decoupled and Fast Decoupled Methods, Comparison of Different Methods, DC load Flow.

UNIT –V POWER SYSTEM STEADY STATE STABILITY ANALYSIS:

Elementary concepts of Steady State, Dynamic and Transient Stabilities.

Description of: Steady State Stability Power Limit, Transfer Reactance, Synchronizing Power Coefficient, Power Angle Curve and Determination of Steady State Stability and Methods to improve steady state stability.

Derivation of Swing Equation. Determination of Transient Stability by Equal Area Criterion, Application of Equal Area Criterion, Critical Clearing Angle Calculation.- Solution of Swing Equation: Point-by-Point Method. Methods to improve Stability - Application of Auto Reclosing and Fast Operating Circuit Breakers.

UNIT – VI REACTIVE POWER CONTROL:

Overview of Reactive Power control, Reactive Power compensation in transmission systems, advantages and disadvantages of different types of compensating equipment for transmission systems, load compensation, Specifications of load compensator, Uncompensated and compensated transmission lines: shunt and Series Compensation.

TEXT BOOKS:

1. Electrical Power Systems – C.L.Wadhwa, Newage International, 3rd Edition.
2. Modern Power System Analysis –I.J.Nagrath & D.P.Kothari, Tata Mc Graw Hill Publishing Company Ltd, 2nd edition.

REFERENCE BOOKS:

1. Power System Analysis and Design – J.Duncan Glover and M.S.Sarma., THOMPSON, 3rd Edition.
2. Electric Energy systems Theory – O.I.Elgerd, Tata Mc Graw Hill Publishing Company Ltd., Second edition.
3. Power System Analysis – Grainger and Stevenson, Tata McGraw Hill.
4. Power System Analysis – Hadi Saadat, Tata Mc Graw Hill Publishing Edition.

UNIT-VI MEASUREMENT OF NON-ELECTRICAL QUANTITIES:

Definition of transducers, Classification of transducers, Advantages of Electrical transducers, Characteristics and choice of transducers, Principle operation of Resistor, Inductor, LVDT and Capacitor transducers, LVDT Applications, Strain gauge and its principle of operation, Gauge factor- Thermistors, Thermocouples, Piezo electric transducers, Photovoltaic, Photo conductive cells. Measurement of strain, Gauge Sensitivity, Displacement, Velocity, Acceleration, Force, Torque, Measurement of Temperature.

TEXT BOOKS:

1. Electrical Measurements and measuring Instruments – E.W. Golding and F.C. Widdis, 5th Edition, Wheeler Publishing.
2. Transducers and Instrumentation– D.V.S Murthy, Prentice Hall of India, 2nd Edition.
3. A course in Electrical and Electronic Measurements and Instrumentation -A.K. Sawhney, Dhanpatrai & Co. 18th Edition.

REFERENCE BOOKS:

1. Measurements Systems, Applications and Design – D O Doebelin- Tata MC Graw-Hill.
2. Principles of Measurement and Instrumentation – A.S Morris, Pearson /Prentice Hall of India.
3. Electronic Instrumentation- H.S.Kalsi Tata MC Graw – Hill Edition, 3rd Edition.
4. Modern Electronic Instrumentation and Measurement techniques – A.D Helfrick and W.D.Cooper, Pearson/Prentice Hall of India.

III year B.Tech – II Sem
POWER SEMICONDUCTOR DRIVES

Code: 101EE13

L	T	P	C
3	1	-	3

Objective :

This course is an extension of Power Electronics applications to AC and DC drives. Control of DC motor drives with single phase and three phase converters and choppers are given in detail. The control of AC motor drives with variable frequency converters and variable voltage are presented.

UNIT – I CONTROL OF DC MOTORS BY SINGLE PHASE AND THREE PHASE CONVERTERS:

Introduction to Thyristor controlled Drives, Single Phase and three phase semi and Fully controlled converters connected to d.c separately excited and d.c series motors, Continuous current operation, Output voltage and current waveforms, Speed and Torque expressions, Speed, Torque Characteristics, Problems on Converter fed d.c motors.

UNIT – II FOUR QUADRANT OPERATION OF DC DRIVES:

Introduction to Four quadrant operation, Motoring operations, Electric Braking, Plugging, Dynamic and Regenerative Braking operations. Four quadrant operation of D.C motors by dual converters, Closed loop operation of DC motor (Block Diagram Only).

UNIT-III CONTROL OF DC MOTORS BY CHOPPERS:

Single quadrant, Two - quadrant and four quadrant chopper fed dc separately excited and series excited motors, Continuous current operation, Output voltage and current wave forms, Speed torque expressions, speed torque characteristics, Problems on Chopper fed D.C Motors, Closed Loop operation (Block Diagram Only).

UNIT – IV CONTROL OF INDUCTION MOTOR ON STATOR SIDE:

Variable voltage characteristics, Control of Induction Motor by AC Voltage Controllers, Waveforms, speed torque characteristics, Variable frequency characteristics, Variable frequency control of induction motor by Voltage source and current source inverter and cyclo converters, PWM control, Comparison of VSI and CSI operations, Speed torque characteristics, numerical problems on induction motor drives, Closed loop operation of induction motor drives (Block Diagram Only).

UNIT –V CONTROL OF INDUCTION MOTOR ON ROTOR SIDE:

Static rotor resistance control, Slip power recovery, Static Scherbius drive, Static Kramer Drive, Their performance and speed torque characteristics, Advantages applications, problems.

UNIT – VI CONTROL OF SYNCHRONOUS MOTORS:

Separate control & self control of synchronous motors, Operation of self controlled synchronous motors by VSI and CSI cyclo converters. Load commutated CSI fed Synchronous Motor, Operation, Waveforms, Speed torque characteristics, Applications Advantages and Numerical Problems, Closed Loop control operation of synchronous motor drives (Block Diagram Only), Variable frequency control, Cyclo converter, PWM, VFI, CSI.

TEXT BOOKS:

1. Fundamentals of Electric Drives – G K Dubey, Narosa Publications
2. Power Electronic Circuits, Devices and applications – M.H.Rashid, PHI.

REFERENCE BOOKS:

1. Power Electronics – MD Singh and K B Khanchandani, Tata – McGraw-Hill Publishing Company.
2. Modern Power Electronics and AC Drives – B.K.Bose, PHI.
3. Thyristor Control of Electric drives – Vedam Subramanyam Tata McGraw Hill Publications.
4. A First course on Electrical Drives – S K Pillai New Age International (P) Ltd, 2nd Edition.

		L	T	P/D	C
		2	2	-	3
Code: 101FL01	III year B.Tech – I Sem				
	Basic Spanish Language				
	Course Contents				
Unit-I	<p>Functional Aspects Greetings, introductions, identifying others; tools to ask meaning, pronunciation and spellings; different nationalities and their languages; Hispanic names, family relations and professions; days of the week, Months.</p> <p>Grammatical Aspects Basic structure of spelling and pronunciation; present indicative of the regular verbs ('ar/er/ir) and 'querer'; subject pronouns; interrogative sentences with 'Por que', and 'quien'; causal phrase with 'porque'; 'ser' and 'estar'; negative sentences; adjectives of nationality.</p>				
Unit-II	<p>Functional Aspects Ordinal and cardinal numbers: quantities; to go shopping, identifying Material, color, size etc; to go to a restaurant, food habits of Spanish and Latin American people.</p> <p>Grammatical Aspects Gender and number of nouns and adjectives; the verb 'tener'; interrogative Sentences; demonstrative and qualitative adjectives.</p>				
Unit-III	<p>Functional Aspects To express opinions on something contradict someone in modest ways; Suggest something, to value things aesthetically and intellectually; Expression of likes and dislikes; expression and reaction to certain things, (agreement or disagreement)</p> <p>Grammatical Aspects Qualitative adjectives, forms and usage, gradations, superlative adjectives, Exclamatory sentences; the verb 'gustar', forms and syntax; personal Pro0nouns; definite and indefinite pronouns, direct object pronouns Prepositions; verbs like 'parecer' and 'encontrar and preferir, their form And syntax, interrogative pronouns.</p>				
Unit-IV	<p>Functional Aspects Invitations; accepting and rejecting invitations; how to fix an appointment; Inviting through e-mail or telephone</p> <p>Grammatical Aspects Present indicative of irregular verbes, expressions with 'tener' and estar Prepositional pronouns; interrogative sentences</p>				

Unit-V **Functional Aspects**
Expression of time; Spanish and Latin American time tables and
Comparison with Indian time tables, festivals Indian and Hispanic
Grammatical Aspects
Time with 'ser', expressions relating to festivals.

Unit-VI **Functional Aspects**
Expressions relating to climate, weather of the day seasons, vacations,
planning of holiday and brochures, hotel reservations, offers
Grammatical Aspects
Expressions with verbs, 'ser' and 'hacer' and other verbs.

Text Book:

1. NOUVEAU ELE INICIAL 1

Reference Books:

1. Espanol sin Fronteras, A. Sanchez, M. Rios, J.A. Metella, SGEL. Madrid, 1997
2. Entre Nosotros A. Sanchez, M. Rios, J.A. Metella, SGEL. Madrid, 1997

Code: 101FL02

**III year B.Tech – I Sem
(Open Elective – I)
Basic French Language
Course Contents**

L	T	P/D	C
2	2	-	3

UNITÉ – I :

Professions et nationalités, vie quotidienne et loisirs, descriptions physiques et psychologiques, nombres cardinaux. Articles définis et indéfinis, genre et nombre des noms et des adjectifs, interrogation et négation, conjugaison du présent.

UNITÉ – II

Intonation, liaison, voyelles orales et nasales. Faire connaissance, inviter et répondre à une invitation, décrire les personnes.

UNITÉ – III

Paris, monuments et lieux publics. La vie de quatre parisiens de professions différentes. Logement et nourriture, vêtements et couleurs, fêtes et faits divers, nombres ordinaux.

UNITÉ – IV

Articles partitifs, adjectifs démonstratifs et possessifs, prépositions et adverbes de quantité et de lieu, pronoms toniques, l'impératif, verbes pronominaux. Intonation, semi-voyelles, liaison, consonnes sonores et sourdes.

UNITÉ – V

Exprimer l'ordre et l'obligation, demander et commander, évaluer et apprécier, féliciter et remercier. Une région de France: la Bourgogne, vie quotidienne à la campagne.

UNITÉ – VI

Teaching passé composé through the above lessons.

Text Book:

1. Dominique, Philippe, *et al.* 1999. *Le Nouveau sans Frontières -I* (Including Exercise Book). Paris: Clé, International (Indian Edition).

Reference Books:

1. Alter Ego I & II. Published by Hachette
2. Connexion I & II. Published by Didier
3. Echo I & II. Clé International publishers
4. Latitude I & II. Published by Didier

Code: 101FL03

**III year B.Tech – I Sem
(Open Elective – I)
Basic German Language
Course Contents**

L	T	P/D	C
2	2	-	3

Unit –I

- Definite and Indefinite articles(including negation)
- Noun: Gender and Plural forms, cases (nominative, accusative, dative & genitive)

Unit –II

- Verb: Strong and Weak verbs, Verbs with separable and inseparable prefixes, modal verbs, position of verb in the main and subordinate clauses, auxiliary verbs, reflexive verbs in accusative and dative cases, imperative constructions

Unit –III

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

Unit –IV

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

Unit –V

- Pretaritim of sein and haben
- Perfect tense

Unit –VI

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

Text Book

1. Hermann Funk, Christina Kuhn, Oliver Bayerlein., Studio d A 1.2005 Comelsen Verlag, Berlin.

Reference Books

1. Rosa –Marie Dallapiazza, Eduard von Jan, Till Schonherr,unter Mitarbeit von Jutta Orth-Chambah Tangram aktuell 1 –Lektion 1-4, Lektion 5 - 8
Max Hueber Verlag. Munchen. 2009
2. Jutta Muller, Thomas Storz, 2006. Laguna. Heuber Veerlag, Ismaning. Deutschland

III year B.Tech – I Sem
PROBABILITY THEORY AND STOCHASTIC PROCESS
 (Open Elective – I)

Code: 101EC10

L	T	P	C
3	1	-	3

UNIT-I

PROBABILITY: Set definitions, sample points and sample spaces, probability of random events, laws of probability, joint, marginal and conditional probabilities, statistical independence.

UNIT-II

RANDOM VARIABLES: Probability distribution functions, Discrete random variables and probability mass function, Expected values; Continuous random variables, Probability density functions, complex random variables; moments and characteristic functions.

RANDOM VECTORS: Joint probability distribution functions, joint probability densities, conditional probability distributions functions, conditional probability densities, independent random variables. Transformations (functions) of random variables

UNIT-III

RANDOM PROCESSES: (i) Definition: The concept, probabilistic structure, Classification, formal definition. (ii) Description: Joint distribution, Analytical description using random variables, Average values: mean, auto-correlation, auto-covariance, Auto-correlation coefficient, two or more random processes: Cross-correlation function, cross-covariance function, cross-correlation coefficient.

UNIT-IV

STATIONARITY AND CORRELATION THEORY: Strict-sense stationary, wide-sense stationary (WSS), Auto-correlation function of real WSS random process and its properties, cross-correlation function and its properties, Power spectral density function of a WSS random process and its properties, Wiener-Khinchine theorem; low-pass and band-pass processes, power and bandwidth calculations; cross-power spectral density function and its properties; power spectral density function of random sequences.

TIME AVERAGING AND ERGODICITY: Time averages - interpretation, mean and variance; ergodicity: general definition, ergodicity of the mean, ergodicity of the auto-correlation function, ergodicity of the power spectral density function

UNIT-V

RESPONSE OF LTI SYSTEMS TO RANDOM PROCESSES: Review of deterministic system analysis - discrete and continuous; mean and auto-correlation of the output, stationarity of the output, correlation and power spectral density of the output, mean-square value of the output, multiple input-output systems; Filtered Gaussian random process.

UNIT-VI

BASIC APPLICATIONS: Randomwalk, Brownianmotion, Thermalnoise, shot noise, Modulation, Cyclostationary process, Bandlimited processes and sampling theory, Deterministic signals in noise, Bispectra and system identification

TEXT BOOKS:

1. Peyton Z. Peebles Jr., Probability, Random Variables and Random Signal Principles, 4th edition Tata McGraw-Hill, New Delhi, 2002.
2. Probability, Random Variables and Stochastic Process – Athanasios Papoulis and S.Unnikrishna Pillai, PHI, 4th Edition, 2002
3. Yannis Viniotis, Probability & Random Processes for Electrical Engineers- Mc-Graw-Hill Book Company, 98.

REFERENCES:

1. G. R. Grimmett, D. R. Stirzaker, Probability and Random Processes, 2nd Edition, Oxford Science Publications, 1995.
2. Wilbur B. Davenport, Jr., Probability and Random Processes, McGraw-Hill Book Company, 1970.
3. Henry Stark, John W. Woods, Probability, Random Processes with Applications to Signal Processing- 3rd edition, Prentice-Hall, 2003

Code: 101EC08

III year B.Tech – I Sem
SIGNALS AND SYSTEMS
 (Open Elective – I)

L	T	P	C
4	0		4

UNIT-I SIGNAL ANALYSIS:

Analogy between vectors and signals, Orthogonal signal space, Signal approximation using orthogonal functions, Mean square error, Closed or complete set of orthogonal functions, Orthogonality in complex functions, Exponential and sinusoidal signals, Concepts of Impulse function, Unit step function, Signum function. Classification of signals periodic, non-periodic, energy and power signals. Examples of physical signals in the real world.

UNIT-II FOURIER REPRESENTATION OF CONTINUOUS TIME SIGNALS:

Periodic Signals: Fourier series, properties of Fourier series, Dirichlet's conditions, Trigonometric, Exponential & Compact (Cosine) Fourier series, Fourier spectrum.

A periodic Signals: Fourier Transforms, Deriving Fourier transform from Fourier series, Fourier transform of arbitrary signal, standard signals, Fourier transform of periodic signals, properties of Fourier transforms, Fourier transforms involving impulse and Signum functions. Introduction to Hilbert Transform.

UNIT-III SIGNAL TRANSMISSION THROUGH LINEAR SYSTEMS:

Linear system, Impulse Response (IR) of a linear system, Linear time invariant (LTI) system, Linear time variant (LTV) system, Transfer function of a LTI system. Filter characteristics of linear systems. Distortion less transmission through a system, Signal bandwidth, system bandwidth, Ideal LPF, HPF and BPF characteristics, Causality and Poly-Wiener criterion for physical realization, relationship between bandwidth and rise time.

UNIT-IV CONVOLUTION AND CORRELATION OF SIGNALS:

Concept of convolution in time domain and frequency domain, Graphical representation of convolution, Convolution properties. Cross correlation and auto correlation of functions, properties of correlation function, Energy density spectrum, Parseval's theorem, Power density spectrum, Relation between auto correlation function and energy/power spectral density function. Relation between convolution and correlation, Detection of periodic signals in the presence of noise by correlation, Extraction of signal from noise by filtering.

UNIT-V SAMPLING:

Sampling theorem – Graphical and analytical proof for Band Limited Signals, Impulse(Ideal) sampling, Natural(Chopped) Sampling and Flat top(S&H) Sampling, Reconstruction of signal from its samples, effect of under sampling – Aliasing, Introduction to Band Pass sampling.

UNIT-VI LAPLACE TRANSFORMS:

Review of Laplace transforms, Partial fraction expansion, Inverse Laplace transform, Concept of region of convergence (ROC) for Laplace transforms, constraints on ROC for various classes of signals, Properties of LT. Relation between LT and FT of a signal.

Laplace transform of certain signals using waveform synthesis. Laplace transform of a periodic signals

Z-Transforms : Fundamental difference between continuous and discrete time signals, discrete time signal representation using complex exponential and sinusoidal components, Periodicity of discrete time using complex exponential signal, Concept of Z- Transform of a discrete sequence. Distinction between Laplace, Fourier and Z transforms. Region of convergence in Z-Transform, constraints on ROC for various classes of signals, Inverse Z-transform, properties of Z-transforms.

TEXT BOOKS:

1. Signals, Systems & Communications - B.P. Lathi, BS Publications, 2003.
2. Signals and Systems - A.V. Oppenheim, A.S. Willsky and S.H. Nawab, PHI, 2nd Edition.

REFERENCES:

1. Signals & Systems - Simon Haykin and Van Veen, Wiley, 2nd Edition.
2. Network Analysis - M.E. Van Valkenburg, PHI Publications, 3rd Edition, 2000.
3. Fundamentals of Signals and Systems - Michel J. Robert, MGH International Edition, 2008.
4. Signals, Systems and Transforms - C. L. Philips, J.M.Parr and Eve A.Riskin, Pearson education, 3rd Edition, 2004.

Code: 101MA71	III year B.Tech – I Sem				
	LOGICAL REASONING-I	L	T	P	C
		2		2	

UNIT I

Series Completion: Number Series, Alphabet Series, Alpha – Numeric Series.

UNIT II

Analogy: Completing the Analogous Pair, Simple Analogy, Choosing the Analogous pair, Double Analogy, Word Analogy, and Number Analogy.

UNIT III

Classification / Odd One Out: Word Classification, Number Classification, Letter Classification.

UNIT IV

Coding – Decoding: Letter Coding, Number Coding, Matrix Coding, Substitution, Deciphering Message Word Codes, Jumbled Coding.

UNIT V

Blood Relations: Deciphering Jumbled up Descriptions, Relation Puzzle – Direction sense test.

UNIT VI

Number, Ranking & Time Sequence Test – Arithmetical Reasoning – Mathematical Operations.

TEXT BOOKS

Verbal and Non Verbal Reasoning - R.S.Agarwal.

Code: 101EE76	Syllabus for B. Tech. III Year II semester			
	COMPREHENSIVE VIVA II			
	L	T	P/D	C
	-	-	-	1

There shall be a Comprehensive Viva-Voce in III year II Semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of an external examiner, Head of the Department and two Senior Faculty members of the Department. The Comprehensive Viva-Voce is aimed to assess the students' understanding in various subjects he/she studied during the B.Tech. course of study up to III Year. The Comprehensive Viva-Voce is valued for 50 marks by the Committee. There are no internal marks for the Comprehensive Viva-Voce.

III year B.Tech – II Sem
ELECTRICAL MACHINES LAB – II

L	T	P	C
		3	2

The following experiments are required to be conducted as compulsory experiments:

1. O.C. & S.C. Tests on Single phase Transformer
2. Sumpner's test on a pair of single phase transformers
3. Scott connection of transformers
4. No-load & Blocked rotor tests on three phase Induction motor
5. Regulation of a three –phase alternator by synchronous impedance & m.m.f. methods
6. V and Inverted V curves of a three—phase synchronous motor.
7. Equivalent Circuit of a single phase induction motor
8. Determination of X_d and X_q of a salient pole synchronous machine

In addition to the above eight experiments, atleast any two of the following experiments are required to be conducted from the following list:

1. Parallel operation of Single phase Transformers
2. Separation of core losses of a single phase transformer
3. Brake test on three phase Induction Motor
4. Regulation of three-phase alternator by Z.P.F. and A.S.A methods
5. Efficiency of a three-phase alternator
6. Heat run test on a bank of 3 Nos. of single phase Delta connected transformers
7. Measurement of sequence impedance of a three-phase alternator.
8. Performance characteristics of a Schrage motor

III year B.Tech – II Sem**Code: 101EE78****POWER ELECTRONICS AND SIMULATION LAB**

L	T	P	C
		3	2

Any Eight of the Experiments in Power Electronics Lab

1. Study of Characteristics of SCR, MOSFET & IGBT
2. Gate firing circuits for SCR's
3. Single Phase AC Voltage Controller with R and RL Loads
4. Single Phase fully controlled bridge converter with R and RL loads
5. Forced Commutation circuits (Class A, Class B, Class C, Class D & Class E)
6. DC Jones chopper with R and RL Loads
7. Single Phase Parallel, inverter with R and RL loads
8. Single Phase Cycloconverter with R and RL loads
9. Single Phase Half controlled converter with R load
10. Three Phase half controlled bridge converter with R-load
11. Single Phase series inverter with R and RL loads
12. Single Phase Bridge converter with R and RL loads
13. Single Phase dual converter with RL loads

Any two simulation experiments with PSPICE/PSIM

PSPICE simulation of single-phase full converter using RLE loads and single-phase AC voltage controller using RLE loads.

PSPICE simulation of resonant pulse commutation circuit and Buck chopper.

PSPICE simulation of single phase Inverter with PWM control.

REFERENCE BOOKS:

1. Simulation of Electric and Electronic circuits using PSPICE – by M.H.Rashid, M/s PHI Publications.
2. PSPICE A/D user's manual – Microsim, USA.
3. PSPICE reference guide – Microsim, USA.
4. MATLAB and its Tool Books user's manual and – Mathworks, USA.

IV year B.Tech – I Sem
POWER STATION PRACTICE

Code: 101EE14

L	T	P	C
3	1	-	3

OBJECTIVE:

Electrical Power plays significant role in day to day life of entire mankind. This course concerns the generation and distribution of power along with the economic aspects.

UNIT -I HYDROELECTRIC POWER STATION:

Elements of hydro electric power station, Types, Concept of pumped storage plants, Storage requirements, Mass curve(explanation only) Estimation of power developed from a given catchments area, Heads and efficiencies

Thermal power stations:

Line diagram of Thermal Power Station (TPS) showing paths of coal, Steam, Water, Air, ash and flue gasses, Brief description of TPS components, Economizers, Boilers, Super heaters, Turbines, Condensers, Chimney and Cooling towers.

UNIT -II GAS AND NUCLEAR POWER STATIONS:

Nuclear Fission and Chain reaction, Nuclear fuels, Principle of operation of Nuclear reactor, Reactor Components, Moderators, Control rods, Reflectors and Coolants, Radiation hazards, Shielding and Safety precautions, Types of Nuclear reactors and brief description of PWR, BWR and FBR.

Gas Power Stations, Principle of Operation and Components (Block Diagram Approach Only).

UNIT - III SUBSTATIONS:

Classification of Substations, Air insulated substations, Indoor & Outdoor substations, Substations layout showing the location of all the substation equipment. Bus bar arrangements in the sub-stations, Simple arrangements like single bus bar, sectionalized single bus bar, Main and transfer bus bar system with relevant diagrams.

Gas insulated substations (GIS): Advantages of Gas insulated substations, Different types of gas insulated substations, Single line diagram of gas insulated substations, Bus bar, Construction aspects of GIS, Installation and maintenance of GIS, Comparison of Air insulated substations and Gas insulated substations.

UNIT-IV POWER FACTOR AND VOLTAGE CONTROL:

Causes of low p.f, Methods of Improving p.f, Phase advancing and generation of reactive KVAR using static Capacitors, Most economical p.f. for constant KW load and constant KVA type loads, Numerical Problems.

Dependency of Voltage on Reactive Power flow, Methods of Voltage Control, Shunt Capacitors, Series Capacitors, Synchronous Capacitors, Tap changing and Booster Transformers

UNIT-V ECONOMIC ASPECTS OF POWER GENERATION AND TARIFF METHODS:

Load curve, Load duration and integrated load duration curves, Load, Demand, Diversity, Capacity, Utilization and plant use factors, Numerical Problems.

Costs of Generation and their division into Fixed, Semi - fixed and Running Costs.

Desirable Characteristics of a Tariff Method, Tariff Methods, Flat Rate, Block-Rate, Two-part, Three –part and power factor tariff methods and Numerical Problems.

UNIT-VI ECONOMIC OPERATION OF POWER SYSTEMS:

Optimal operation of Generators in Thermal Power Stations, Heat rate Curve, Cost Curve, Incremental fuel and Production costs, Input-output characteristics, Optimum generation allocation with line losses neglected. Optimum generation allocation including the effect of transmission line losses, Loss Coefficients, General transmission line loss formula. Hydrothermal scheduling.

TEXT BOOKS:

1. A Text Book on Power System Engineering - M.L.Soni, P.V.Gupta, U.S.Bhatnagar and A.Chakraborti, Dhanpat Rai & Co. Pvt. Ltd.
2. Principles of Power Systems - V.K Mehta and Rohit Mehta S.CHAND& COMPANY LTD., New Delhi.

REFERENCE BOOKS:

1. Elements of Power Station design and practice - M.V. Deshpande, Wheeler Publishing.
2. Electrical Power Systems - C.L.Wadhawa New age International (P) Limited, Publishers.
3. Electrical Power Generation, Transmission and Distribution - S.N.Singh., PHI.
4. Gas turbine performance - PP Wals, P.Fletcher, Blackwell Publisher.

Code: 101EE15	IV year B.Tech – I Sem				
	NON-CONVENTIONAL ENERGY SOURCES	L	T	P	C
		4			4

OBJECTIVE:

It introduces solar energy its radiation, Collection, storage and application. It also introduces the Wind energy, Biomass energy, geothermal energy and ocean energy as alternative energy sources.

UNIT – I -PRINCIPLES OF SOLAR RADIATION:

Role and potential of new and renewable source, The solar energy option, Environmental impact of solar power, Physics of the sun, the solar constant, Extraterrestrial and terrestrial solar radiation, Solar radiation on tilted surface, Instruments for measuring solar radiation and sun shine, Solar radiation data.

UNIT-II- SOLAR ENERGY COLLECTION STORAGE AND APPLICATIONS:

Flat plate and concentrating collectors, Classification of concentrating collectors, orientation and thermal analysis, Advanced collectors.

Different methods, Sensible, Latent heat and stratified storage, Solar ponds. Solar Applications- solar heating/cooling technique, Solar distillation and drying, Photovoltaic energy conversion.

UNIT – III WIND ENERGY:

Sources and potentials, Horizontal and vertical axis windmills, Performance characteristics, Betz criteria

BIO-MASS: Principles of Bio-Conversion, Anaerobic/aerobic digestion, Types of Bio-gas digesters, Gas yield, Combustion characteristics of bio-gas, Utilization for cooking, I.C.Engine operation and economic aspects.

UNIT – IV GEOTHERMAL ENERGY:

Resources, types of wells, methods of harnessing the energy, Potential in India.

UNIT-V OCEAN ENERGY:

OTEC, Principles utilization, Setting of OTEC plants, Thermodynamic cycles. Tidal and wave energy, Potential and conversion techniques, Mini-hydel power plants and their economics.

UNIT-VI DIRECT ENERGY CONVERSION:

Need for DEC, Carnot cycle, Limitations, principles of DEC. Thermoelectric generators, seebeck, Peltier and joul Thomson effects, Figure of merit, materials, Applications, MHD generators, Principles, Dissociation and ionization, Hall effect, Magnetic flux, MHD accelerator, MHD Engine, Power generation systems, Electron gas dynamic conversion, economic aspects. Fuel cells, principles, Faraday's law's, Thermodynamic aspects, selection of fuels and operating conditions.

TEXT BOOKS:

1. Non-Conventional Energy Sources - G.D. Rai
2. Renewable Energy Technologies - Ramesh & Kumar /Narosa.

REFERENCE BOOKS:

1. Renewable energy resources - Tiwari and Ghosal/ Narosa.
2. Non-Conventional Energy - Ashok V Desai /Wiley Eastern.
3. Non-Conventional Energy Systems - K Mittal /Wheeler
4. Solar Energy - Sukhame

Code: 101EE16

IV year B.Tech – I Sem
UTILIZATION OF ELECTRICAL ENERGY
(PROFESSIONAL ELECTIVE-I)

L	T	P	C
3	1	-	3

OBJECTIVE:

This subject deals with the fundamentals of illumination and its classification and the electric heating and welding. It gives the detailed study of all varieties of Electric drives and their applications to electrical engineering.

UNIT – I DRIVE APPLICATIONS:

Type of electric drives, Choice of motor, starting and running characteristics, Speed control, Temperature rise, Particular applications of electric drives, Types of industrial loads, Continuous, Intermittent and variable loads, Load equalization.

UNIT – II ELECTRIC HEATING:

Advantages and methods of electric heating, Resistance heating induction heating and dielectric heating.

Electric welding:

Electric welding, resistance and arc welding, electric welding equipment, comparison between A.C. and D.C. Welding.

UNIT – III ILLUMINATION FUNDAMENTALS:

Introduction, terms used in illumination, laws of illumination, polar curves, photometry, integrating sphere, sources of light.

UNIT – IV VARIOUS ILLUMINATION METHODS

Discharge lamps, MV and SV lamps – comparison between tungsten filament lamps and fluorescent tubes, Basic principles of light control, Types and design of lighting and flood lighting.

UNIT – V ELECTRIC TRACTION - I :

System of electric traction and track electrification. Review of existing electric traction systems in India. Special features of traction motor, methods of electric braking-plugging rheostatic braking and regenerative braking. Mechanics of train movement. Speed-time curves for different services – trapezoidal and quadrilateral speed time curves.

UNIT – VI ELECTRIC TRACTION - II :

Calculations of tractive effort, power, specific energy consumption for given run, effect of varying acceleration and braking retardation, adhesive weight and coefficient of adhesion.

TEXT BOOKS:

1. Utilization of Electric Power & Electric Traction - J.B. Gupta, S.K.Kataria & Sons, 9th edition.
2. Utilization of Electric Energy - E.Open Shaw Taylor Orient Longman, 2nd edition.
3. Art & Science of Utilization of electrical Energy - Partab, Dhanpat Rai & Sons, 2nd edition.

REFERENCE BOOKS:

1. Utilization of Electrical Power including Electric drives and Electric traction - N.V.Suryanarayana, New Age International (P) Limited, 1st edition.
2. Generation, Distribution and Utilization of electrical Energy - C.L. Wadhwa, New Age International (P) Limited, 1st revised edition.

Code: 101EE17

IV year B.Tech – I Sem
HIGH VOLTAGE ENGINEERING
(PROFESSIONAL ELECTIVE-I)

L	T	P	C
3	1	-	3

OBJECTIVE;

This subject deals with the detailed analysis of Breakdown occur in gaseous, Liquids and solid dielectrics. Information about generation and measurement of High voltage and current. In addition the High voltage testing methods are also discussed.

UNIT - I INTRODUCTION TO HIGH VOLTAGE TECHNOLOGY AND APPLICATIONS:

Electric Field Stresses, Gas / Vacuum as Insulator, Liquid Dielectrics, Solids and Composites, Estimation and Control of Electric Stress, Numerical methods for electric field computation, Surge voltages, their distribution and control, Applications of insulating materials in transformers, Rotating machines, Circuit breakers, Cable power capacitors and bushings.

UNIT – II BREAK DOWN IN GASEOUS, LIQUID AND SOLID DIELECTRICS:

Gases as insulating media, Collision process, Ionization process, Townsend's criteria of breakdown in gases, Paschen's law. Liquid as Insulator, Pure and commercial liquids, Breakdown in pure and commercial liquids.

Intrinsic breakdown, Electromechanical breakdown, Thermal breakdown, Breakdown of solid dielectrics in practice, Breakdown in composite dielectrics, Solid dielectrics used in practice.

UNIT – III GENERATION AND MEASUREMENT OF HIGH VOLTAGES AND CURRENTS:

Generation of High Direct Current Voltages, Generation of High alternating voltages, Generation of Impulse Voltages, Generation of Impulse currents, Tripping and control of impulse generators.

Measurement of High Direct Current voltages, Measurement of High Voltages Alternating and impulse, Measurement of High Currents-direct, Alternating and Impulse, Oscilloscope for impulse voltage and current measurements.

UNIT – IV OVER VOLTAGE PHENOMENON AND INSULATION CO-ORDINATION:

Natural causes for over voltages, Lightning phenomenon, Over voltage due to switching surges, system faults and other abnormal conditions, Principles of Insulation Coordination on High voltage and Extra High Voltage power systems.

UNIT – V NON-DISTRUCTIVE TESTING OF MATERIAL AND ELECTRICAL APPARATUS:

Measurement of D.C Resistively, Measurement of Dielectric Constant and loss factor, Partial discharge measurements.

UNIT – VI HIGH VOLTAGE TESTING OF ELECTRICAL APPARATUS:

Testing of Insulators and bushings, Testing of Isolators and circuit breakers, Testing of cables, Testing of Transformers, Testing of Surge Arresters, Radio Interference measurements.

TEXT BOOKS:

1. High Voltage Engineering – M.S.Naidu and V. Kamaraju, TMH Publications, 3rd Edition.
2. High Voltage Engineering Fundamentals – E.Kuffel, W.S.Zaengl, J.Kuffel by Elsevier, 2nd Edition.

REFERENCE BOOKS:

1. High Voltage Engineering – C.L.Wadhwa, New Age Internationals (P) Limited.
2. High Voltage Insulation Engineering – Ravindra Arora, Wolfgang Mosch, New Age International (P) Limited.

Code: 101EC15

IV year B.Tech – I Sem
DIGITAL SIGNAL PROCESSING
(PROFESSIONAL ELECTIVE-I)

L	T	P	C
3	1		3

UNIT-I

INTRODUCTION: Introduction to Digital Signal Processing: Discrete time signals & sequences, Linear shift invariant systems, Stability and causality. Linear constant coefficient difference equations. Frequency domain representation of discrete time signals and systems.

UNIT-II DISCRETE FOURIER SERIES:

Properties of discrete Fourier series, DFS representation of periodic sequences, Discrete Fourier transforms: Properties of DFT, linear convolution of sequences using DFT, Computation of DFT. Relation between Z-transform and DFS.

UNIT-III FAST FOURIER TRANSFORMS:

Fast Fourier transforms (FFT), Radix-2 decimation in time and decimation in frequency FFT Algorithms, Inverse FFT and FFT for composite N.

UNIT-IV REALIZATION OF DIGITAL FILTERS:

Review of Z-transforms, Applications of Z – transforms, Solution of difference equations of digital filters, Block diagram representation of linear constant-coefficient difference equations, Basic structures of IIR systems, Transposed forms, Basic structures of FIR systems, System function.

UNIT-V IIR AND FIR DIGITAL FILTERS:

Analog filter approximations – Butter worth and Chebyshev, Design of IIR Digital filters from analog filters, Design Examples: Analog-Digital transformations. **FIR DIGITAL FILTERS** : Characteristics of FIR Digital Filters, frequency response. Design of FIR Digital Filters using Window Techniques, Frequency Sampling technique, Comparison of IIR & FIR filters.

UNIT-VI MULTIRATE DIGITAL SIGNAL PROCESSING:

Decimation, interpolation, sampling rate conversion, Implementation of sampling rate conversion, Applications of Multi rate signal processing: Sub-band coding, Filter banks, Design of Phase Shifters.

WAVELET TRANSFORMS- Wavelet Transforms, Applications of Wavelets.

TEXT BOOKS:

1. Digital Signal Processing, Principles, Algorithms, and Applications: John G. Proakis, Dimitris G. Manolakis, Pearson Education, PHI, 2007.
2. Discrete Time Signal Processing – A.V.Oppenheim and R.W. Schaffer, PHI
3. S.J. Orfanidis, Optimum Signal Processing, McGraw Hill, 1989.

REFERENCE BOOKS:

1. Digital Signal Processing: Andreas Antoniou, TATA McGraw Hill, 2006.
2. Digital Signal Processing: MH Hayes, Schaum's Outlines, TATA Mc-Graw Hill, 2007.
3. DSP Primer - C. Britton Rorabaugh, Tata McGraw Hill, 2005.
4. Fundamentals of Digital Signal Processing using Matlab – Robert J. Schilling, Sandra L. Harris, Thomson, 2007.
5. Digital Signal Processing – Alan V. Oppenheim, Ronald W. Schafer, PHI Ed., 2006.

Code: 101EE18

IV year B.Tech – I Sem
OPTIMIZATION TECHNIQUES
(PROFESSIONAL ELECTIVE-II)

L	T	P	C
3	1	-	3

UNIT – I INTRODUCTION AND CLASSICAL OPTIMIZATION TECHNIQUES:

Statement of an Optimization problem – design vector – design constraints – constraint surface-objective function – objective function surfaces – classification of Optimization problems.

UNIT – II CLASSICAL OPTIMIZATION TECHNIQUES:

Single variable Optimization – multi variable Optimization without constraints – necessary and sufficient conditions for minimum/maximum – multivariable Optimization with equality constraints. Solution by method of Lagrange multipliers – multivariable Optimization with inequality constraints – Kuhn – Tucker conditions.

LINEAR PROGRAMMING

Standard form of a linear programming problem – geometry of linear programming problems – definitions and theorems – solution of a system of linear simultaneous equations – pivotal reduction of a general system of equations – motivation to the simplex method – simplex algorithm.

UNIT – III TRANSPORTATION PROBLEM

Finding initial basic feasible solution by north – west corner rule, least cost method and Vogel’s approximation method – testing for optimality of balanced transportation problems.

UNIT – IV UNCONSTRAINED NONLINEAR PROGRAMMING:

One – dimensional minimization methods: Classification, Fibonacci method and Quadratic interpolation method

Unconstrained Optimization Techniques Univariate method, Powell’s method and steepest descent method.

UNIT – V CONSTRAINED NONLINEAR PROGRAMMING:

Characteristics of a constrained problem, Classification, Basic approach of Penalty Function method; Basic approaches of Interior and Exterior penalty function methods. Introduction to convex Programming Problem.

UNIT – VI DYNAMIC PROGRAMMING:

Dynamic programming multistage decision processes – types – concept of sub optimization and the principle of optimality – computational procedure in dynamic programming – examples illustrating the calculus method of solution - examples illustrating the tabular method of solution.

TEXT BOOKS:

1. “Engineering optimization: Theory and practice”- S. S.Rao, New Age International (P) Limited, 3rd edition, 1998.
2. “ Introductory Operations Research” - H.S. Kasene & K.D. Kumar, Springer(India), Pvt .LTd.

REFERENCE BOOKS:

- 1 Optimization Methods in Operations Research and systems Analysis – K.V. Mital and C. Mohan, New Age International (P) Limited, Publishers, 3rd edition, 1996.
2. Operations Research – Dr. S.D.Sharma.
3. “Operations Research: An Introduction” – H.A. Taha, PHI Pvt. Ltd., 6th edition
4. Linear Programming – by G. Hadley

IV year B.Tech – I Sem
Code: 101IT03 DATA BASE MANAGEMENT SYSTEMS
(PROFESSIONAL ELECTIVE-II)

L	T	P	C
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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.

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.

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.

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.

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.

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.

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

	IV year B.Tech – I Sem			
Code: 101IT10	NEURAL NETWORKS AND FUZZY SYSTEMS			
	(PROFESSIONAL ELECTIVE – II)			
	L	T	P	C
	3	1	-	3

UNIT – I CHARACTERISTICS OF NEURAL NETWORKS:

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

UNIT – II FEEDFORWARD NEURAL NETWORKS:

Introduction, Analysis of pattern Association Networks, Analysis of Pattern Classification Networks, Analysis of pattern storage Networks. Analysis of Pattern Mapping Networks.

UNIT – III FEEDBACK NEURAL NETWORKS

Introduction, Analysis of Linear Autoassociative FF Networks, Analysis of Pattern Storage Networks.

UNIT – IV FROM CLASSICAL SETS TO FUZZY SETS: A GRAND PARADIGM SHIFT:

Introduction, Crisp Sets: An Overview, Fuzzy Sets: Basic Types, Fuzzy Sets: Basic Concepts, Characteristics and Significance of the paradigm Shift.

Fuzzy Sets Vs Crisp Sets:

Additional properties of α - Cuts, Representations of Fuzzy Sets, Extension Principle for Fuzzy Sets

UNIT – V-OPERATIONS ON FUZZY SETS:

Types of operations, Fuzzy Complements, Fuzzy intersections: T- Norms, Fuzzy Unions: T- Conorms, Combinations of Operations, Aggregation Operations.

Fuzzy Arithmetic: Fuzzy Numbers, Linguistic Variables, Arithmetic Operations on Intervals, Arithmetic Operations on Fuzzy Numbers, Lattice of Fuzzy Numbers, Fuzzy Equations.

UNIT-VI-FUZZY LOGIC:

Classical Logic: An Over View, Multivalued Logic, Fuzzy Prepositions, Fuzzy Quantifiers, Linguistic Hedges, Inference from Conditional Fuzzy Prepositions, Inference from Conditional and Quantified Prepositions, Inference from Quantified Prepositions.

TEXT BOOKS

1. Fuzzy Sets and Fuzzy Logic - George J. Klir/ Bo Yuan Printice Hall of India Pvt. Ltd.
2. Artificial neural networks – B. Vegnanarayana, Printice Hall of India P Ltd.

REFERENCES:

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

III year B.Tech – II Sem
Code: 101MB56
BANKING OPERATIONS, INSURANCE AND RISK MANAGEMENT
(OPEN ELECTIVE – II)

L	T	P	C
3	-	-	3

UNIT I**INTRODUCTION TO BANKING BUSINESS:**

Banking Sectors- Retail, Corporate, Rural, and International; Non-banking financial intermediaries; Types of advances and deposits in a bank, New Dimensions and Products. - Credit, Debit and Smart Cards, and e-Banking Structure of the Indian Banking System's. Commercial Banks – Public and Private Sector and Foreign Banks. Cooperative Banks.

UNIT II**BANKING REFORMS AND REGULATION:**

Banking Regulation Act, 1949, Reserve Bank of India Act 1934, and Reserve Bank's Instruments of Credit Control. Deficiencies in Indian Banking including Problems Accounts and Non-Performing Assets, Banking Sector Reforms.

UNIT III**INSURANCE:**

Need for and importance of insurance, branches of insurance (life and general insurance) policy and procedure.

UNIT IV**INSURANCE BUSINESS ENVIRONMENT:**

Mathematical basis of life insurance, reinsurance coverage, regulatory and legal framework governing the insurance, business and economics of insurance, need for changing mindset; Latest trends.

UNIT V**INTRODUCTION TO RISK**

Types of Risks facing Business and Individuals, Risk Management Process, Risk Management Methods, Risk Identification and Measurement, Risk Management Techniques: Non Insurance Methods.

UNIT VI**INSURANCE AS A RISK MANAGEMENT**

Techniques Principles: Principle of Indemnity, Principle of Insurable Interest, Principle of Subrogation, Principle of utmost good Faith, Requisites of Insurable Risks, Requirements of an Insurance Contract, Distinguishes Characteristics of Insurance Contracts, Role of Agents and Brokers.

TEXT BOOKS

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

REFERENCES

1. Scott E. Harringam Gregory R. Nichaus: Risk Management & Insurance, , TMH, 2009.
2. George E. Rejda: Principles of risk Management & Insurance, , 9/e, Pearson Education, 2009.
3. G.Koteshwar: Risk Management Insurance and Derivatives, Himalaya, 2008
4. Gulati: Principles of Insurance Management, Excel, 2009
5. James S Trieschmann, Robert E. Hoyt & David N. Sommer: Risk Management & Insurance, Cengage, 2009.
6. Dorfman: Introduction to Risk Management and Insurance, 8/e,Pearson, 2009.
7. P.K.Gupta: Insurance and Risk Management, Himalaya ,2009.
8. Vivek & P.N. Asthana: Financial Risk Management, Himalaya, 2009

III year B.Tech – II Sem
Code: 101CS03 OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(OPEN ELECTIVE – II)

L	T	P	C
3			3

UNIT-I:

History of Java, Java buzzwords, Data types, 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.

UNIT-II

Inheritance –Definition, Single inheritance, Benefits of inheritance, Member access rules, Super uses, Polymorphism, Method overriding, Using final with inheritance, Abstract classes, Base class object.

UNIT-III

Interfaces : Definition, Variables and methods in interfaces, Differences between classes and interfaces, Usage implements and extends keyword, An application using interfaces, Uses of interfaces.

Packages: Defining, Types of packages, Creating and importing a user defined package

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, Creating threads using Thread class and Runnable interface, Synchronizing threads, Thread life cycle .

UNIT-V

Advantages of GUI over CUI, the AWT class hierarchy, Component, Frame, Event handling.

Delegation event model, Closing a Frame, mouse and keyboard events, Adapter classes. User interface components, Labels, Button, Scrollbars, Text components, Check box, Check box groups, Choices, Lists panels, Scroll pane, Menu bar, Graphics, Layout manager, Layout manager types, Boarder, Grid, Flow, Card and grid bag.

Applets, Concepts of Applets, Differences between applets and applications, Life cycle of an applet, Types of applets, Creating applets, Passing parameters to applets.

UNIT-VI

Networking, Basics of network programming, Addresses, Ports, Sockets, Simple client server program, Multiple clients, Sending file from server to client, Parallel search server.

Text Books:

1. Java; the complete reference- 6th editon, 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

III year B.Tech – II Sem
Code: 101EM01 DISCRETE STRUCTURES AND GRAPH THEORY
(OPEN ELECTIVE – II)

L	T	P	C
3	-	-	3

UNIT-I PROPOSITIONAL LOGIC:

Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalences, implications, Arguments, Normal forms, proof of contradiction, Conditional proof.

UNIT-II FIRST ORDER LOGIC:

Predicates, Quantifiers, Free & Bound variables, Rules of inference, Consistency, Automatic Theorem Proving.

UNIT-III RELATIONS :

Properties of Binary Relations, equivalence, transitive closure, compatibility and partial ordering relations, Hasse diagrams, Lattices, Boolean algebras. Functions: Inverse Function, Composition of functions, recursive Functions

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

UNIT-IV ELEMENTARY COMBINATORICS:

Basics of counting, Combinations & Permutations with and without repetitions, Constrained repetitions, Binomial Coefficients, Binomial & Multinomial theorems, Euler function, Derangements, Principles of Inclusion – Exclusion, Pigeon hole principle and its applications

UNIT-V RECURRENCE RELATIONS:

Generating Functions, Function of Sequences, Calculating Coefficient of generating function, Recurrence relations, Solving recurrence relation by substitution and Generating functions. Characteristics roots, Solution of in-homogeneous recurrence Relations.

UNIT-VI GRAPH THEORY:

Basic Concepts, Representation of Graph, DFS, BFS, Spanning trees, Planar graphs, Coloring, Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers, Connectivity, Cut vertices, cut edges, Matchings and coverings, Independent sets.

TEXT BOOKS:

1. Elements of Discrete mathematics – A computer Oriented Approach- C L Liu, D P Mohapatra. Third Edition, Tata Mc Graw Hill.
2. Discrete Mathematics for Computer Scientists & Mathematicians, J.L. Mott, A. Kandel, T.P. Baker, PHI.
3. Discrete mathematics with applications to computer science, J.P.Tremblay and R.Manohar, TMH

REFERENCES:

1. Discrete and Combinational Mathematics- An Applied Introduction-5th Edition, Ralph. P.Grimaldi. Pearson Education
2. Discrete Mathematics and its Applications, Kenneth H. Rosen, Fifth Edition.TMH.
3. Discrete Mathematical structures Theory and application-Malik & Sen, Cengage.

Code: 101EM07

III year B.Tech – II Sem
VLSI DESIGN
(OPEN ELECTIVE – II)

L	T	P	C
3	1	-	3

UNIT-I

Introduction to IC Technology, IC fabrication process, Layout design rules, packaging integrated circuits

UNIT-II

Electrical characteristics of MOSFET, NMOS, CMOS and Bi-CMOS:Ids-vds relationships, MOS transistor threshold voltage, gm, gds, figure of merit, pass transistors, NMOS inverter, various pull-ups, CMOS inverter analysis and Design, BiCMOS inverters.

UNIT-III INTERCONNECTS:

Parasitic estimation. Lumped and distributed models, transmission line model, interconnect layer sizing and scaling, power distribution design-clocking and timing issues.

Unit-IV CMOS Inverter:

Static and dynamic behavior, CMOS combinational logic circuits: Static and dynamic CMOS Design.

UNIT-V CMOS SEQUENTIAL LOGIC CIRCUITS:

Static latches and registers, dynamic latches and registers.

DATA PATH DESIGN: memory, control logic, system consideration, adders, multipliers, shifters, high density memory elements.

UNIT-VI DIGITAL SYSTEM DESIGN IMPLEMENTATION OPTIONS:

ASICs, PLDs, CPLDs, FPGAs.

CMOS TESTING: Faults, Test generation, Design for Testability, Scan based design, BIST, BST.

TEXT BOOKS:

1. Jan M. Rabaey, A. Chandrakasan, and B. Nikolic, Digital Integrated Circuits: A design Perspective- Pearson Education, 2002
2. Wayne Wolf, Modern VLSI Design system on chip design- Prentice Hall of India, Third Edition 2005
3. Neil H. E. Weste and David Harris, Principles of CMOS VLSI Design- Second edition, Pearson education, 2005

REFERENCES:

1. S.M.Kang & Y. Leblebici, CMOS Digital Integrated Circuits- McGraw Hill, 2002
2. John P.Uyemura, Introduction to VLSI Circuits and Systems- John Wiley & Sons,2002

Code: 101EM06

III year B.Tech – II Sem
EMBEDDED AND REAL TIME SYSTEMS
(OPEN ELECTIVE – II)

L	T	P	C
4	1	-	4

UNIT I

INTRODUCTION: Embedded systems overview, design challenge, processor technology, IC technology, Design Technology, Trade-offs. Single purpose processors RT-level combinational logic, sequential logic (RT-level), custom single purpose processor design (RT-level), optimizing custom single purpose processors.

UNIT II

GENERAL PURPOSE PROCESSORS: Basic architecture, operation, Pipelining, Programmer's view, development environment, Application Specific Instruction-Set Processors (ASIPs) – Micro Controllers and Digital Signal Processors.

UNIT III

STATE MACHINE AND CONCURRENT PROCESS MODELS: Introduction, models Vs. languages, finite state machines with data path model (FSMD), using state machines, program state machine model (PSM), concurrent process model, concurrent processes, communication among processes, synchronization among processes, implementation, data flow model, real-time systems.

UNIT IV

COMMUNICATION INTERFACE: Need for communication interfaces, RS232 / UART, RS422 / RS485, USB, Infrared, IEEE 1394 Firewire, Ethernet, IEEE 802.11, Blue tooth.

UNIT V

EMBEDDED / RTOS CONCEPTS – I : Architecture of the Kernel, Tasks and Task scheduler, Interrupt service routines, Semaphores, Mutex.

UNIT VI

EMBEDDED/RTOS CONCEPTS – II : Mailboxes , Message Queues, Event Registers, Pipes, Signals

UNIT VII

EMBEDDED / RTOS CONCEPTS – III : Timers, Memory Management, Priority inversion problem, Embedded operating systems Embedded Linux, Real-time operating systems, RT Linux, Handheld operating systems, Windows CE.

UNIT VIII

DESIGN TECHNOLOGY: Introduction, Automation, Synthesis, Parallel evolution of compilation and synthesis, Logic Synthesis, RT synthesis, Behavioral Synthesis, Systems Synthesis and Hardware/ Software Co-Design, Verification, Hardware/Software co-simulation, Reuse of intellectual property codes.

TEXT BOOKS:

1. Embedded System Design – A Unified Hardware/Software Introduction - Frank Vahid, Tony D. Givargis, John Wiley, 2002.
2. Embedded / Real Time Systems – KVKK Prasad, Dreamtech Press, 2005.

REFERENCES:

1. Embedded Microcomputer Systems – Jonathan W. Valvano, Brooks / Cole, Thompson Learning.
2. An Embedded Software Primer – David E. Simon, Pearson Ed., 2005.
3. Introduction to Embedded Systems – Raj Kamal, TMS, 2002.

IV year B.Tech – I Sem
Code: 101MA73

LOGICAL REASONING—II

L	T	P	C
		2	2

Unit – I

Data Sufficiency: Problems in which a question on any topic such as Coding – Decoding, Blood Relations, Directions, Arithmetical Reasoning etc.

Unit – II

Puzzle Test: Classification Type Questions, Seating Arrangements Comparison Type Questions, Sequential Order of Things, Selection Based on given conditions, Family – Based Puzzles, Jumbled Problems.

Unit – III

Assertions and Reason – Logical Venn Diagrams – Alpha Numeric Sequence Puzzle.

Unit – IV

Cubes and Dice – Analytical Reasoning

Unit – V

Logical Deduction: Logic, Statement – Arguments, Statement – Assumptions, Statement – Conclusions, Deriving Conclusions from Passages.

Unit – VI

Clocks & Calendar.

Text Books:

Verbal and Non Verbal Reasoning by R.S.Agarwal.

Code: 101EE81	IV year B.Tech – I Sem			
	ELECTRICAL WORKSHOP			
	L	T	P	C
			3	2
1.	Core assembly for a choke coil			
2.	Choke construction –insulation, winding and testing			
3.	Core assembly for single phase transformer			
4.	Insulation and winding			
5.	Testing			
6.	Motor testing single phase motor			
7.	Motor testing three phase motor			
8.	D.C. machine trainer kit			
9.	Fan-testing and assembling			
10.	Cable jointing			
11.	D.O.L starter –forward and reverse			
12.	Y-Δ starter forward and reverse			

IV year B.Tech – I Sem
Code: 101EM71 MICROPROCESSORS AND MICROCONTROLLERS LAB

L	T	P	C
		3	2

I. Microprocessor 8086:

Introduction to MASM/TASM.

Arithmetic operation – Multi byte addition and subtraction, Multiplication and Division – Signed and unsigned Arithmetic operation, ASCII – arithmetic operation.

Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion.

By using string operation and Instruction prefix: Move Block, Reverse string, Sorting, Inserting, Deleting, Length of the string, String comparison.

Modular Program: Procedure, Near and Far implementation, Recursion.

Dos/BIOS programming: Reading keyboard (Buffered with and without echo) – Display characters, Strings.

II. Interfacing

8259 – Interrupt Controller.

8279 – Keyboard Disply.

8255 – PPI.

8251 – USART.

III. Merocontroller 8051:

1. Reading and Writing on a parallel port.

2. Timer in different modes.

3. Serial communication implementation.

4. Understanding three memory areas of 00 – FF (Programs using above areas).

5. Using external interrupts

6. Programs using special instructions like swap, bit/byte, set/reset etc.

7. Programs based on short, page, absolute addressing.

IV year B.Tech – I Sem
Code: 101EE82 MEASUREMENTS AND INSTRUMENTATION LAB

L	T	P	C
-	-	3	2

The following experiments are required to be conducted as compulsory experiments:

1. Calibration and Testing of single phase energy Meter
2. Calibration of dynamometer power factor meter
3. Crompton D.C. Potentiometer – Calibration of PMMC ammeter and PMMC voltmeter
4. Kelvin's double Bridge – Measurement of resistance – Determination of Tolerance.
5. Measurement of % ratio error and phase angle of given C.T. by comparison.
6. Schering bridge & Anderson bridge.
7. Measurement of 3 phase reactive power with single-phase wattmeter.
8. Measurement of parameters of a choke coil using 3 voltmeter and 3 ammeter methods.

In addition to the above eight experiments, atleast any two of the experiments from the following list are required to be conducted:

9. Optical bench – Determination of polar curve measurement of MHCP of filament lamps
10. Calibration LPF wattmeter – by Phantom testing
11. Measurement of 3 phase power with single watt meter and 2 No's of C.T.
12. C.T. testing using mutual Inductor – Measurement of % ratio error and phase angle of given C.T. by Null method.
13. P.T. testing by comparison – V.G. as Null detector – Measurement of % ratio error and phase angle of the given P.T.
14. Dielectric oil testing using H.T. testing Kit
15. LVDT and capacitance pickup – characteristics and Calibration
16. Resistance strain gauge – strain measurements and Calibration
17. Polar curve using Lux meter, Measurement of intensity of illumination of fluorescent lamp.
18. Transformer turns ratio measurement using a.c. bridge.
19. Relay testing using secondary current injection set for over current & reverse current.
20. A.C. Potentiometer – Polar form/Cartesian form – Calibration of AC Voltmeter, Parameters of Choke.
21. Measurement of Iron loss in a bar specimen using a CRO and using a wattmeter.

Syllabus for B. Tech. IV Year I semester**PRE PROJECT SEMINAR****Code: 101EE79**

L	T	P/D	C
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A pre-project seminar in fourth year first semester will be evaluated for 50 marks as follows. This is aimed at the students to identify a project on which they are likely to continue for their project in final year second semester.

Preliminary Report on progress of the work	10 marks
Mid Semester presentation	10 marks
Final report	10 marks
Final Presentation and Defense before a departmental Committee consisting of head, a senior faculty and supervisor	20 marks
There shall be no external evaluation in pre-project seminar.	

**Syllabus for B. Tech. IV Year I semester
INDUSTRY ORIENTED MINI PROJECT**

Code: 101EE80

L	T	P/D	C
-	-	-	2

There shall be an industry-oriented mini-Project in their specialization that may be carried out in collaboration with an industry / R & B organization / Academic Institution, to be taken up during the vacation after III year II Semester examination. However, the mini project and its report shall be evaluated during IV year I Semester. The industry oriented mini project shall be evaluated for a total of 75 marks with 25 marks for internal assessment and 50 marks for end examination. The mini project must be submitted in report form and should be presented before a committee, consisting of an external examiner, head of the department, a senior faculty member of the department and supervisor of the mini project.

The pattern of internal evaluation is as follows:

Work in progress as evaluated by internal guide	:	05 marks
Work in progress as evaluated by External guide	:	10 marks
Report	:	05 marks
Seminar presentation and defense of project	:	05 marks

If the mini project is conducted within the college, the work in progress is evaluated by the supervisor for 15 marks.

IV year B.Tech – II Sem**Code: 101EC34****COMMUNICATION THEORY**

L	T	P	C
4			4

UNIT-I -AMPLITUDE MODULATION:

Need for modulation, Types of Amplitude modulation, AM, DSB SC, SSB SC, Power and BW requirements, generation of AM, DSB SC, SSB SC, Demodulation of AM : Diode detector, Product demodulation for DSB SC & SSB SC.

UNIT-II- ANGLE MODULATION:

Frequency & Phase modulations, Advantages of FM over AM, Bandwidth consideration, Narrow band and Wide band FM, Comparison of FM & PM.

UNIT-III-PULSE MODULATIONS:

Sampling, Nyquist rate of sampling, Sampling theorem for Band limited signals, PAM, regeneration of base band signal, PWM and PPM, Time Divison Multiplexing, Frequency Divison Multiplexing, Asynchronous Multiplexing.

UNIT-IV-DIGITAL COMMUNICATION:

Advantages, Block diagram of PCM, Quantization, Effect of quantization, Quantization error, Base band digital signal, DM, ADM, ADPCM and comparison.

UNIT-V-DIGITAL MODULATION:

ASK, FSK, PSK, DPSK, QPSK demodulation, Coherent and incoherent reception.

UNIT-VI-INFORMATION THEORY :

Concept of information, Rate of information and entropy, Source coding for optimum rate of information, Coding efficiency, Shanon-Fano and Huffman coding.

Error control coding : Introduction, Error detection and correction codes, Block codes, Convolution codes.

TEXT BOOKS:

1. Communication Systems Analog and Digital – R.P. Singh, SD Sapre, TMH, 20th reprint, 2004.
2. Communication Systems- Simon Haykin, Wiley student Edition, 2nd Edition

REFERENCES:

1. Electronic Communication Systems – Kennedy & Davis, TMH, 4th edition, 2004.
2. Principle of Communications- Taub & Schilling, TMH, 2003.

IV year B.Tech – II Sem
Code: 101EE19 FLEXIBLE AC. TRANSMISSION SYSTEMS
(PROFESSIONAL ELECTIVE – III)

L	T	P	C
4			4

UNIT I - FACTS CONCEPTS:

Transmission interconnections power flow in an AC system, Loading capability limits, Dynamic stability considerations, Importance of controllable parameters basic types of FACTS controllers, Benefits from FACTS controllers.

UNIT II - VOLTAGE SOURCE CONVERTERS:

Single phase three phase full wave bridge converters transformer connections for 12 pulse 24 and 48 pulse operation. Three level voltage source converter, Pulse width modulation converter, Basic concept of current source Converters, Comparison of current source converters with voltage source converters.

UNIT III - STATIC SHUNT COMPENSATION:

Objectives of shunt compensation, Mid point voltage regulation voltage instability prevention, Improvement of transient stability, Power oscillation damping, Methods of controllable var generation, Variable impedance type static var generators switching converter type var generators hybrid var generators.

UNIT IV - SVC AND STATCOM: The regulation and slope transfer function and dynamic performance, Transient stability enhancement and power oscillation damping operating point control and summary of compensator control.

UNIT V - STATIC SERIES COMPENSATORS: Concept of series capacitive compensation, Improvement of transient stability, Power oscillation. Damping.

UNIT VI - GSC, TSSC AND TCSC :

Functional requirements. GTO Thyristor controlled series capacitor(GSC) , Thyristor switched series capacitor(TSSC) and thyristor controlled series capacitor(TCSC) control schemes for GSC TSSC and TCSC.

TEXT BOOK:

1. "Understanding FACTS Devices" N.G. Hingorani and L. Gygi, IEEE Press Publications.
2. "Flexible AC Transmission Systems" Yong Hau Song & Allah T.Johns, published by IEE London.

REFERENCES:

1. "Flexible AC Transmission Systems, modeling and control" - X.P.Zhang, C.Rehtanz, B.Pal, published by Springer.
2. "Thyristor based facts controllers for electrical transmission sytems" - R.Mohan Mathur, Rajiv K.Varma, ISBN0 471 – 20643 – 1, Wiley – IEEE Press.
3. "Facts modeling and Simulation in Power Networks", Ensique, Acha, Hugo John Willey Psons.
4. "Application of Power Electroncis in Power Systems" - Saifull Khalid, Neeraj Nivas, University Science Press, New Delhi.

Code: 101EE20

IV year B.Tech – II Sem
ELECTRICAL DISTRIBUTION SYSTEM
(PROFESSIONAL ELECTIVE – III)

L	T	P	C
4			4

UNIT – 1 GENERAL CONCEPTS

Introduction to distribution systems, Load modelling and characteristics. Coincidence factor, contribution factor loss factor - Relationship between the load factor and loss factor. Classification of loads (Residential, Commercial, Agricultural and Industrial) and their characteristics.

UNIT – II DISTRIBUTION FEEDERS

Design Considerations of Distribution Feeders: Radial and loop types of primary feeders, Voltage levels, Feeder loading; Basic design practice of the secondary distribution system.

UNIT – III SUBSTATIONS

Location of Substations: Rating of distribution substation, Service area within primary feeders. Benefits derived through optimal location of substations.

UNIT – IV SYSTEM ANALYSIS Voltage drop and power-loss calculations: Derivation for voltage drop and power loss in lines, Manual methods of solution for radial networks, Three phase balanced primary lines.

UNIT – V PROTECTION & CO-ORDINATION

Objectives of distribution system protection, Types of common faults and procedure for fault calculations. Protective Devices: Principle of operation of Fuses, Circuit Reclosures, line sectionalizers, and circuit breakers.

Coordination of Protective Devices: General coordination procedure.

UNIT – VI POWER FACTOR IMPROVEMENT & VOLTAGE CONTROL

Capacitive compensation for power-factor control. Different types of power capacitors, Shunt and series capacitors, Effect of shunt capacitors (Fixed and switched), Power factor correction, capacitor allocation - Economic justification - Procedure to determine the best capacitor location.

Voltage Control: Equipment for voltage control, Effect of series capacitors, Effect of AVB / AVR, line drop compensation.

TEXT BOOK:

1. “Electric Power Distribution system, Engineering” – Turan Gonen, Mc Graw-hill 2nd edition.
2. Electric Power Distribution – A.S. Pabla, Tata Mc Graw-hill, 4th edition.

REFERENCE BOOK:

1. Electrical Power Distribution and Automation – S.Sivanagaraju, V.Sankar, Dhanpat Rai publishers. Rai & Co, 1st edition.
2. Electrical Power Distribution Systems – V.Kamaraju, Right Publishers, 2nd edition.

Code: 101EE20

IV year B.Tech – II Sem
HIGH VOLTAGE D.C. TRANSMISSION
(PROFESSIONAL ELECTIVE – III)

L	T	P	C
4			4

OBJECTIVE:

This subject deals with the importance of HVDC transmission, analysis of HVDC converters, Faults and protections, Harmonics and Filters. It also deals with Reactive power control and Power factor improvements of the system.

UNIT – I BASIC CONCEPTS:

Economics & Terminal equipment of HVDC transmission systems, Types of HVDC Links, Apparatus required for HVDC Systems, Comparison of AC & DC Transmission, Application of DC Transmission System, Planning & Modern trends in D.C. Transmission.

UNIT – II ANALYSIS OF HVDC CONVERTERS:

Choice of Converter configuration, analysis of Graetz, characteristics of 6 Pulse & 12 Pulse converters, Cases of two 3 phase converters in star, star mode, their performance.

UNIT – III CONVERTER & HVDC SYSTEM CONTROL:

Principal of DC Link Control, Converters Control Characteristics, Firing angle control, Current and extinction angle control, Effect of source inductance on the system, Starting and stopping of DC link, Power Control.

UNIT-IV MULTI TERMINAL DC SYSTEM:

Introduction, potential applications of MTDC systems, Types of MTDC systems, Series MTDC system, parallel MTDC system, comparison of series and parallel MTDC systems control and protection of MTDC system: current margin method, voltage limiting control, Decentralized current reference balancing, Two ACR method, protection of MTDC systems.

REACTIVE POWER CONTROL IN HVDC

Reactive Power Requirements in steady state, Conventional control strategies, Alternate control strategies, sources of reactive power, AC Filters, Shunt capacitors-synchronous condensers.

UNIT-V CONVERTER FAULT & PROTECTION

Converter faults, Protection against over current and over voltage in converter station, Surge arresters, Smoothing reactors, DC breakers, Audible noise-space charge field, corona effects on DC lines, Radio interference.

UNIT – VI HARMONICS- FILTERS

Generation of Harmonics, Characteristics harmonics, calculation of AC Harmonics, Non-Characteristics harmonics, Adverse effects of harmonics, Calculation of voltage & Current harmonics. Types of AC filters, Design of Single tuned filters.

TEXT BOOKS:

1. HVDC Power Transmission Systems Technology and system Interactions – K.R.Padiyar, New Age International (P) Limited, and Publishers.
2. EHVAC and HVDC Transmission Engineering and Practice – S.Rao.

REFERENCE BOOKS:

1. HVDC Transmission – J.Arrillaga.
2. Direct Current Transmission – E.W.Kimbark, John Wiley & Sons.
3. Power Transmission by Direct Current – E.Uhlmann, B.S. Publications

**IV year B.Tech – II Sem
PROJECT**

Code: 101EE83

L	T	P/D	C
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Out of total 200 marks for project work (in the final year second semester), 50 marks shall be for Internal Evaluation and 150 marks for the External Evaluation at the end of the Semester.

External Evaluation of the project (viva-voce) shall be conducted by a committee appointed by the chief superintendent. The committee consists of an external examiner, HoD, a senior faculty member and internal guide.

The pattern of Internal Evaluation is as follows:

Division of marks for internal assessment – 50 marks

- Progress of Project work and the corresponding interim report as evaluated by internal guides at the end of 5 weeks : 05 Marks
- Seminar at the end of 5 weeks : 05 Marks
- Progress of Project work as evaluated by guides at the end of 10 weeks : 05 Marks
- Seminar at the end of 10 weeks : 05 Marks
- Evaluation by the Guides (at the end of 15 weeks) : 10 Marks
- Project Report : 05 Marks
- Final presentation and defense of the project : 15 Marks

If the project is conducted internally the marks supposed to be given by external guide will be given by internal guide himself.

Division of Marks for External Evaluation – 150 Marks

Pattern of External Evaluation for Project

- Final Project Report : 30 Marks
- Presentation : 20 Marks
- Demonstration / Defense of Project : 100 Marks

**IV year B.Tech – II Sem
COMPREHENSIVE VIVA - III**

Code: 101EE84

L	T	P/D
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There shall be a Comprehensive Viva-Voce in IV year II Semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of an external examiner, Head of the Department and two Senior Faculty members of the Department. The Comprehensive Viva-Voce is aimed to assess the students' understanding in various subjects he/she studied during the B.Tech. course of study up to IV Year. The Comprehensive Viva-Voce is valued for 50 marks by the Committee. There are no internal marks for the Comprehensive Viva-Voce.

**IV year B.Tech – II Sem
TECHNICAL SEMINAR**

Code: 101EE85

L	T	P/D	C
-	-	-	2

There shall be a technical seminar evaluated for 25 marks in fourth year second semester. The evaluation is purely internal and will be conducted as follows:

Preliminary Report on progress of the work and viva	05 marks
Final report	05 marks
Presentation and Defence before a departmental committee Consisting of Head, a senior faculty and supervisor	15 marks
