

**COURSE STRUCTURE
AND
DETAILED SYLLABUS
for
B.Tech Four Year Degree Course – I - IV year
in
ELECTRONICS AND COMMUNICATION ENGINEERING
(ECE)**

(Applicable for the batches admitted from 2012-2013)



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

SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY (AUTONOMOUS)
B.Tech in Electronics & Communications Engineering

COURSE STRUCTURE 2012(R)

I Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	121EN01	English – I	3	---	---	3	30	70
2	121MA01	Engineering Mathematics – I	3	1	---	3	30	70
3	121PH01	Engineering Physics – I	3	1	---	3	30	70
4	121CH01	Engineering Chemistry- I	2	1	---	2	30	70
5	121IT01	Computer Programming	3	1	---	3	30	70
6	121ME01	Engineering Drawing – I	2	---	4	4	30	70
7	121EN71	English Language Lab – I	---	---	2	1	25	50
8	121PH71	Engineering Physics Lab – I	---	---	3/2	1	25	50
9	121CH71	Engineering Chemistry Lab	---	---	3/2	1	25	50
10	121IT71	Computer Programming Lab	---	---	3	2	25	50
11	121ME71	Engineering Workshop -I	---	---	3/2	1	25	50
12	121IT72	IT Work Shop-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	121EN02	English – II	2	1	---	2	30	70
2	121MA03	Engineering Mathematics – II	3	1	---	3	30	70
3	121PH02	Engineering Physics – II	3	1	---	3	30	70
4	121CS01	Data Structures and C ++	4	1	---	4	30	70
5	121ME02	Engineering Drawing – II	1	---	3	2	30	70
6	121EC05	Electronic Devices and Circuits	3	2	---	3	30	70
7	121CH02	Engineering Chemistry-II	2	1	---	2	30	70
8	121EN72	English Language Lab - II	---	---	2	1	25	50
9	121CS71	Data Structures and C ++ Lab	---	---	3	2	25	50
10	121ME72	Engineering Workshop – II	---	---	3/2	1	25	50
11	121PH72	Engineering Physics Lab- II	---	---	3/2	1	25	50
Total			18	7	10	24	310	690

II Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	121MA05	Engineering Mathematics-III	3	1	---	3	30	70
2	121MA07	Probability and statistics	3	2	---	3	30	70
3	121EE43	Network Analysis	4	0	0	4	30	70
4	121EE42	Electrical Technology	3	1	0	3	30	70
5	121EC07	Electronic Circuit Analysis	3	1	0	3	30	70
6	121EC08	Signals and Systems	3	1	0	3	30	70
7	121EN73	Functional and Communicative Written English	---	---	2	2	25	50
8	121EC71	Electronic Devices & Circuits Lab	---	---	3	2	25	50
9	121EC72	Basic Simulation Lab	---	---	3/2	1	25	50
10	121EE94	Electrical Technology Lab	---	---	3/2	1	25	50
Total			19	6	8	25	280	620

II Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	121BT06	Environmental Studies	3	1	---	3	30	70
2	121ME04	Basic mechanical Engineering	3	2	---	3	30	70
3	121EC09	Pulse and Digital Circuits	3	1	---	3	30	70
3	121EC10	Probability Theory and stochastic Process	3	1	---	3	30	70
4	121EC06	Switching Theory and Logic Design	3	1	---	3	30	70
6	121EC12	Electromagnetic Theory and Transmission Lines	3	1	---	3	30	70
7	121EN74	Effective English Communication and Soft Skills	---	---	2	2	25	50
8	121EC90	Comprehensive Viva Voce - I	---	---	---	1	---	50
9	121EC79	Pulse and Digital Circuits Lab	---	---	3	2	25	50
10	121EC77	Electronic Circuit Analysis Lab	0	0	3	2	25	50
Total			18	7	8	25	255	620

III Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	3C511	Analog Communications	3	1	-	3	30	70
2	3C513	Linear and Digital IC Applications	3	1	-	3	30	70
3		Open Elective – I	3	-	-	3	30	70
4	3CC15	Digital Signal Processing	4	1	-	4	30	70
5	3ZC01	Managerial Economics and Financial Analysis	3	1	-	3	30	70
6	3HC76	Quantitative Aptitude	-	-	2	1	25	50
7	3C591	Group Project	-	-	3	1	25	50
8	3C573	Linear and Digital IC Applications Lab	-	-	4	2	25	50
9	3C574	Analog Communications Lab	-	-	4	2	25	50
10	3C575	Digital Signal Processing Lab	-	-	4	2	25	50
11	3C583	Technical paper Writing & Seminar-I	-	-	3	1	25	-
Total			16	4	20	25	300	600

III Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	3C630	Microprocessors, Microcontrollers and Applications	3	1	-	3	30	70
2	3C617	Digital Communications	3	2	-	3	30	70
3		Open Elective –II	3	-	-	3	30	70
4	3AC07	Control Systems	3	1	-	3	30	70
5	3C514	Antennas and Wave Propagation	3	2	-	3	30	70
6		Professional Elective-I	3	1	-	3	30	70
7	3HC77	Logical Reasoning	-	-	2	1	25	50
8	3C692	Comprehensive Viva Voce – II	-	-	-	1	-	50
9	3C682	MPMCA Lab	-	-	4	2	25	50
10	3C680	Digital Communication Lab	-	-	4	2	25	50
11	3C684	Technical paper Writing & Seminar-II	-	-	3	1	25	-
Total			18	7	13	25	280	620

IV YEAR – I SEMESTER

S.No.	Subject Code	SUBJECT	L	T	P/D	C	Max. Marks	
							Int	Ext
1	3C731	VLSI Technology and Design	3	1	--	3	30	70
2	3ZC02	Management Science	3	1	-	3	30	70
3	3C720	Micro Wave Engineering	3	1	-	3	30	70
4	3EC05	Computer Networks	3	1	-	3	30	70
5	3C726	Optical Communications	4	1	-	4	30	70
6		Professional Elective – II	3	1	-	3	30	70
7	3C793	Project Phase-I	-	-	2	1	50	-
8	3C794	Industry oriented Mini Project Evaluation	-	-	-	2	25	50
9	3EC91	Computer Networks Lab	-	-	4	2	25	50
10	3C782	Micro Wave and Optical Communications Lab	-	-	4	2	25	50
11	3C783	VLSI Technology and Design Lab	-	-	4	2	25	50
12	3C785	Technical paper Writing & Seminar-III	-	-	2	1	25	-
Total			19	6	16	29	355	620

IV Year – II Semester

S.No.	Subject Code	SUBJECT	L	T	P/D	C	Max. Marks	
							Int	Ext
1		Professional Elective – III	3	1	-	3	30	70
2	3C831	Radar Systems	3	1	-	3	30	70
3	3GC33	Culture, Values, Professional Ethics & IPR	2	1	-	2	30	70
4	3C895	Project Phase-I	-	-	15	10	50	150
5	3C896	Comprehensive Viva Voce – III	-	-	-	2	-	50
6	3C886	Technical paper Writing & Seminar –IV	-	-	2	1	25	-
Total			8	3	17	21	165	410

Open Elective-I		
1	3HC41	Basic French Language
2	3HC51	Basic Spanish Language
3	3HC46	Basic German Language
4	3ZC06	Technology Management
5	3ZC04	Entrepreneurship
6	3FC09	Web Technologies
7	3B515	Product and Service Design
8	3EC70	Java Programming

Open Elective-II		
1	3ZC03	Banking Operation, Insurance and Risk Management
2	3FC10	Neural Networks and Fuzzy Logic
3	3ZC05	General Management and Entrepreneurship
4	3ZC07	Fundamentals of Disaster management
5	3FC19	Data Base Systems
6	3ZC12	Project Management & Finance

Professional Elective-I		
1	3C622	Telecommunication Switching Systems and Networks
2	3C623	Satellite Communication
3	3DC03	Computer Organization

Professional Elective-II		
1	3DC06	Embedded & Real Time Systems
2	3CC25	Cellular and Mobile Communications
3	3CC70	Industrial Automation
4	3C724	Digital Design Through Verilog HDL

Professional Elective-III		
1	3C827	Wireless Communication and Networks
2	3C828	Design of Fault Tolerant System
3	3C829	Image and Speech Processing
4	3EC07	Operating Systems

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121EN01

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L T P/D C

3 -- -- 3

SYLLABUS FOR B.TECH. I YEAR 1ST SEMESTER, 2012 – 13**ENGLISH – I****(ENGLISH LANGUAGE TEACHING THROUGH LITERATURE)**

(Common to all branches)

UNIT I: NOBLE THOUGHT

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

UNIT II: BIOGRAPHY

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

UNIT III: HUMAN INTEREST

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

UNIT IV: DISASTER MANAGEMENT

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

UNIT V: HUMOUR

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

UNIT VI: Outlook

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

Text Books:

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

Reference Books:

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

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**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – I Semester

L	T	P	C
3	1	0	3

CODE: (121MA01) ENGINEERING MATHEMATICS –I
(Common to all branches except Bio-Technology)

UNIT-I**Matrix Theory-I**

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

UNIT-II**Matrix Theory-II**

Characteristic roots and vectors of a matrix, properties of Eigen values and Eigen Vectors, Caley-Hamilton theorem(without proof) and its applications, Diagonalization of a matrix.

UNIT-III

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

UNIT-IV

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

UNIT-V**Mean value theorems and Functions of several variables**

Mean value theorems (Without Proof) – Taylor’s and Maclaurin’s theorems with out remainders and Taylor’s series expansions.

Functions of several variables

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

UNIT-VI**Multiple integrals**

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

TEXT BOOKS:

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

REFERENCE BOOKS:

1. A text Book of KREYSZIG’s Engineering Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications.
2. A text book of Engineering Mathematics, M. Venkata Krishna, Jaico Publishing House, 2010.

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I Year B.Tech – I Semester

L	T	P	C
3	1	0	3

CODE: (121PH01)

ENGINEERING PHYSICS – 1

UNIT - I

Crystallography and Crystal Structures: Space Lattice, Unit Cell, Lattice Parameters, Crystal Systems, Bravais Lattices, Miller Indices, Crystal Planes and Directions, Inter Planar Spacing of Orthogonal Crystal Systems, Atomic Radius, Co-ordination Number and Packing Factor of SC, BCC, FCC, and hcp Structures.

UNIT-II

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

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

UNIT- III

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

UNIT-IV

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

UNIT-V

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

UNIT-VI

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

Text Books:

1. P K Palanisamy, Engineering Physics, Sitech Publications

Reference Books:

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

121CH01

SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY
Proposed Syllabus-For B.Tech I Year I Sem for the Academic Year 2012-13
ENGINEERING CHEMISTRY-I
(Common to all Branches)

L	T	P/D	C
2	1	0	2

UNIT-I: WATER TECHNOLOGY-I

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

UNIT-II: WATER TECHNOLOGY-II

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

UNIT III: ELECTROCHEMISTRY

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

UNIT IV: BATTERIES

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

UNIT v: SCIENCE OF CORROSION

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

UNIT VI: PROTECTIVE COATING AND METHODS THEIR APPLICATIONS ON METALS

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

Organic Coatings: Paints – Constituents and their functions

Text Books:

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

Reference Books:

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

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**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – I Semester

L	T	P	C
3	1	0	3

CODE: (121IT01) COMPUTER PROGRAMMING

(Common to all Branches)

UNIT – I

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

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

UNIT – II

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

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

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

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

UNIT – III

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

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

Parameter passing – Call by value and call by reference.

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

Macros – Definition, examples, comparison with functions.

UNIT – IV

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

Text Books:

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

References:

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

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**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
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I Year B.Tech – I Semester

L	T	P	C
2	0	4	4

CODE: (121ME01) ENGINEERING DRAWING – I
(Common to all Branches)

UNIT – I

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

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

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

Curves used in Engineering Practice and their Constructions:

Conic Sections including Rectangular Hyperbola - General method only.

UNIT – II

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

UNIT – III

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

UNIT –IV

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

UNIT –V

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

UNIT –VI

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

TEXT BOOKS:

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

REFERENCES:

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

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ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – I Semester

L	T	P	C
0	0	2	1

CODE: 121EN71

ENGLISH LANGUAGE LAB – I

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

Objectives:

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

Syllabus:

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

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

Minimum Lab Requirements

The English Language Lab shall have two parts.

- i) The Computer aided Language Lab for 60 students with 60 systems, one master console. LAN facility and English language software for self-study by learners.
- ii) The Communication Skills Lab with movable chairs and audio-vusyak aids with a P.A. System, a T.V., a digital stereo-audio & video system and camcorder etc.

System Requirement (Hardware component)

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

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

Suggested Software:

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

REFERENCES

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

2012-2013**ECE****SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)****I Year B.Tech – I Semester****L T P C
0 0 3/2 1****CODE: (121PH71)****Engineering Physics Lab – 1
(Common to all Branches)**

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

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

2012-2013**ECE****SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)****I Year B.Tech – I Semester****L T P C
0 0 3/2 1****CODE: (121CH71) Engineering Chemistry Lab
(Common to all Branches)****Minimum any Six of the following Experiments**

1. Estimation of MnO_2 in Pyrolusite.
2. Estimation of Hardness of water.
3. Estimation of Mn^{+2} / Cu^{+2} ions by colorimetry.
4. Estimation of acid by conductometric titrations.
5. Estimation of acid by potentiometric titrations.
6. Determination of viscosity.
7. a) Preparation of Aspirin
b) Preparation of Polymer (Thiokol rubber).
8. Determination of Flash and Fire point of a fuel using Abel's / Pensky – Martin's Apparatus.
9. Determination of Calorific value of a solid fuel by Bomb Colorimeter.
10. Green penetration Test.

2012-2013

ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – I Semester

L	T	P	C
0	0	3	2

**Information Technology
Code: 121IT71 COMPUTER PROGRAMMING LAB
(Common to all Branches)**

1. Unit I (Cycle 1)

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

2. Unit II (Cycle 2)

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

3. Unit II (Cycle 3)

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

4. Unit III (Cycle 4)

1. Write three C programs to print a multiplication table for a given number using while, do-while, and for loops.
2. Write a C program to compute the sum of:
 1. $1+x+x^2+x^3+\dots+x^n$, given x and n.

2. $1! + 2! + 3! + \dots + n!$, given n .
 3. $1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10! + \dots$ to n terms where the n^{th} term becomes less than 0.0001.
- 5. Unit III (Cycle 5)**
1. Write a C program in the menu driven style to perform the operations +, -, *, /, % between two given integers.
 2. Write a C program to find the largest and the least of some numbers given by the user.
 3. Write a C program to find the sum of the digits of a positive integer.
- 6. Unit III (Cycle 6)**
1. Write C functions for the following:
 1. A function that takes an integer n as argument and returns 1 if it is a prime number and 0 otherwise.
 2. A function that takes a real number x and a positive integer n as arguments and returns x^n .
 3. A function that takes a positive integer n as an argument and returns the n^{th} Fibonacci number.
 2. Using recursion write C functions for the following:
 1. Factorial of a non-negative integer n .
 2. Number of combinations of n things taken r at a time.
 3. Greatest Common Divisor of two integers.
 4. Least Common Multiple of two integers.
- 7. Unit III (Cycle 7)**
1. Write a menu driven style program to compute the above functions (cycle 6) on the choice of the function given by the user.
 2. Define macros for the following and use them to find sum of the squares of the minimum and maximum of two given numbers.
 1. Larger of two numbers.
 2. Smaller of two numbers.
 3. Sum of the squares of two numbers.
 3. Write a program to generate Pascal's triangle.
 4. Write a program to count the number of letters, words, and lines in a given text.
- 8. Unit IV (Cycle 8)**
1. Write a program to store the numbers given by the user in an array, and then to find the mean, deviations of the given values from the mean, and variance.
 2. Write a C program to initially store user given numbers in an array, display them and then to insert a given number at a given location and to delete a number at a given location.
 3. Write a program to store user given numbers in an array and find the locations of minimum and maximum values in the array and swap them and display the resulting array.

9. Unit IV (Cycle 9)

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

10. Unit V (Cycle 10)

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

11. Unit VI (Cycle 11)

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

12. Unit VI (Cycle 12)

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

2012-2013**ECE****SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)****I Year B.Tech – I Semester****L T P C
0 0 3/2 1****Code: (121ME71) ENGINEERING WORKSHOP – I
(Common to all branches)****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

2012-2013

ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – I Semester

L	T	P	C
0	0	3/2	1

Code: 121IT72

INFORMATION TECHNOLOGY LAB

Week1:

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

Week 2:

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

Week 3:

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

Week 4:

Introduction to Linux Operating system, Linux Commands, DOS commands

Week 5:

Install computer applications in Linux and windows.
Software and hardware trouble shoot, personal computer security settings and application software of the system.

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

Week 6:**Drafting of 2D Figures:**

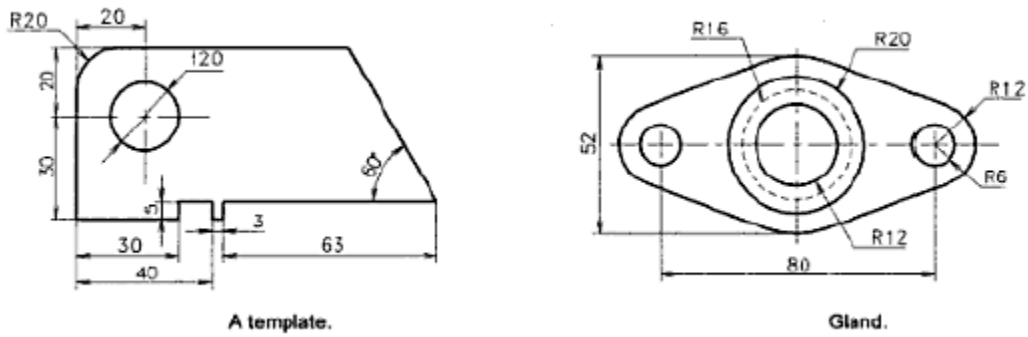
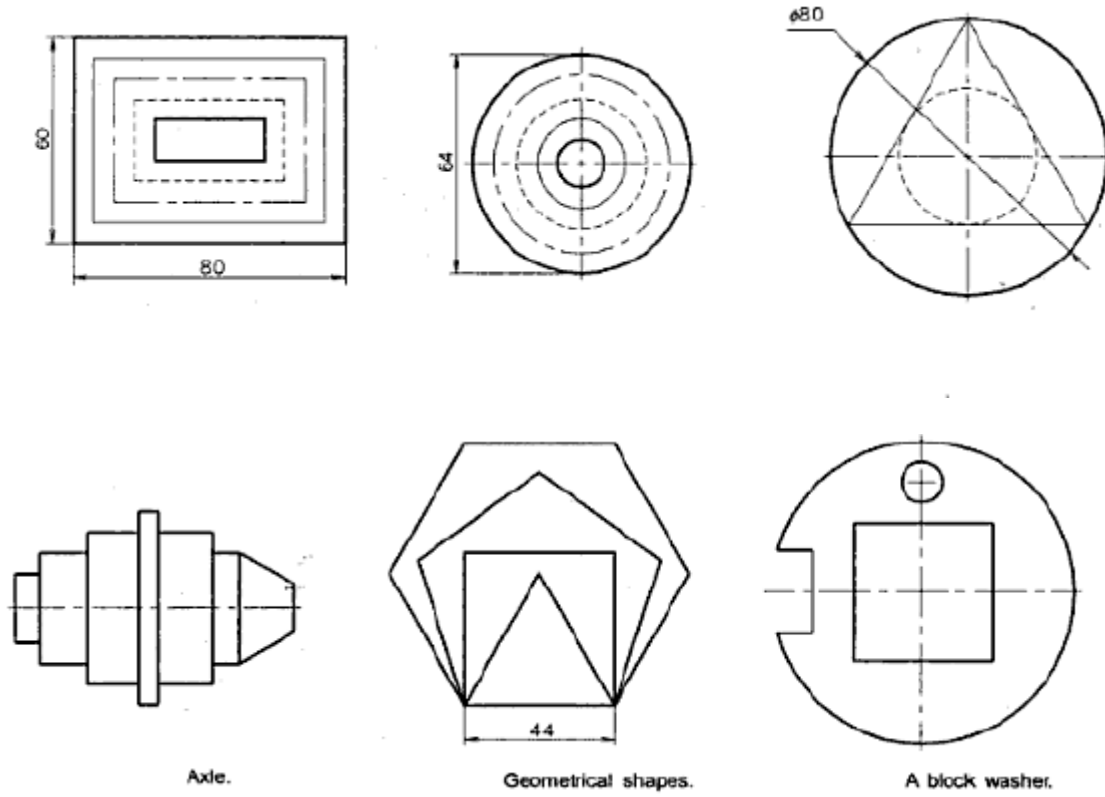
Draw commands – Line, Rectangle, Circle, Arc, Polygon, Ellipse, Hatch, text – Various methods of using these commands.

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

Dimensioning commands –Dimensioning of lines, arcs

Week 7:

Simple Exercises on drawing using AUTOCAD:



TEXT BOOK:

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

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**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – II Semester

L T P C
2 0 0 2

Code: (121EN02)

ENGLISH – II**(ENGLISH LANGUAGE TEACHING THROUGH LITERATURE)****UNIT – I**

1. Speech : Swami Vivekananda
2. Short Story : The Lottery Ticket: Anton Chekhov
3. Grammar : Phrasal Verbs

UNIT – II

1. Poem : Leisure- W.H.Davies
2. Short Story : Ha' Penny – Alan Paton
3. Grammar : Concord-Subject-Verb Agreement

UNIT – III

1. Short Story : A Flowering Tree- A.K. Ramanujan
2. Letter : Abraham Lincoln's Letter to His Son's Teacher
3. Grammar : Sentence Construction-I
(Kinds of Sentences-Assertive, Imperative, Interrogative, Exclamatory)

UNIT – IV

1. Essay : 'Of Studies' -Francis Bacon
2. Short Story : The Only American From Our Village by Arun Joshi
3. Grammar : Sentence Construction-II
(Simple, Compound, Complex sentences)

UNIT – V

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

UNIT –VI

1. Speech : Polonious Speech –An extract from Shakespeare's *Hamlet*

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.

Reference Books:

sBarron's TOEFL; Barron, Galgotias Publication Pvt. Ltd.

1. A Modern Approach to Verbal And Non Verbal Reasoning – R S Aggarwal, S.Chand Publications.

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**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – II Semester

L	T	P	C
3	1	0	3

Code: (121MA03)

ENGINEERING MATHEMATICS – II

(Common to all branches except Bio-Technology)

UNIT-I**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).

UNIT-II**Partial Differential Equations:**

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

UNIT-III**Laplace Transformations:**

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

Inverse Laplace transforms:

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

UNIT-IV**Z- transforms:**

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

UNIT-V

Sequences and series: Sequences and series- Convergence and divergence – Comparison test – integral test – Cauchy root test – Ratio test– Raabe's test – Log test

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

UNIT-VI**Fourier Transforms:**

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

TEXT BOOKS:

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

REFERENCE BOOKS:

1. A text Book of KREYSZIG's Engg Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications.
2. A text book of Engineering Mathematics, M. Venkata Krishna, Jaico Publishing House, 2010.

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**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – II Semester

L T P C
3 1 0 3

CODE: (121PH02)

ENGINEERING PHYSICS – II

(For EEE, ECE, ECM, CSE, IT)

UNIT-I

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

UNIT-II

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

UNIT-III

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

UNIT - IV

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

UNIT - V

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

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

UNIT - VI

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

Text Books:

1. P K Palanisamy, Engineering Physics, Sitech Publications

Reference Books: -

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

2012-2013

ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – II Semester

L	T	P	C
3	1	0	3

CODE: (121CS01)

**DATA STRUCTURES AND C++
(Common to all Branches)**

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 tree, terminology, representation, traversals
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, Constructors-default constructor, parameterized constructor, constructor initialization list, copy constructor. Destructors.

UNIT – VI

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

TEXT BOOKS

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

REFERENCES

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

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**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – II Semester

L	T	P	C
1	0	2	2

CODE: (121ME02)

**ENGINEERING DRAWING – II
(Common to all branches)**

UNIT – I**Scales:** Construction of Plain, Diagonal, Comparative and Vernier Scales.**UNIT – II****Development of Surfaces:** Development of Surfaces of Right Regular Solids – Prisms, Cylinders, Pyramids, Cones and their parts.**UNIT – III****Isometric Projections/views:** Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines.

Conversion of Orthographic Views to Isometric Views of simple objects.

UNIT –IV**Transformation of Projections:** Conversion of isometric views to orthographic views of simple objects.**UNIT –V****Perspective Projections:** Principle, Perspective elements, Perspective View of Points, Lines, Plane Figures and Simple Solids - Vanishing Point Method, Visual ray method.**UNIT –VI****Introduction to Computer Aided Drafting:** Generation of points, lines, curves, polygons, simple solids, dimensioning.**TEXT BOOKS:**

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

REFERENCES:

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

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**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – II Semester

L	T	P	C
3	2	-	3

CODE: (121EC05)

Electronic Devices and Circuits

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.

UNIT- II

PN JUNCTION DIODE: p-n junction diode under reverse & forward bias, -transient and AC conditions- non ideal junctions-break down of junctions (Avalanche and Zener Break down)-Zener Diode Characteristics Diode applications.

UNIT-III

BIPOLAR JUNCTION TRANSISTOR: Fundamentals of BJT operation – saturation ,active and cut off characteristics –switching characteristics- minority carriers 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, output impedance .CE amplifier-its analysis and frequency response.

UNIT-IV

FIELD EFFECT TRANSISTOR: JFET characteristics (Qualitative and quantitative discussion) small signal model of JFET and MOSFET characteristics (Enhancement and depletion mode); Symbols of MOSFET ,Comparison of Transistors .Introduction to SCR and UJT.

UNIT- V

TRANSISTOR AMPLIFIERS: Analysis 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 and 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 Devices and Circuits by Sanjeev Guptha, Dhapat Rai Publications.

121CH02

SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY
Proposed Syllabus-For B.Tech I Year II Sem for the Academic Year 2012-13
ENGINEERING CHEMISTRY-II
(Common to all Branches Except BT)

L	T	P/D	C
2	1	0	2

UNIT I: PHASE RULE

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

UNIT II: POLYMER TECHNOLOGY

Polymers, terminology, Polymerization- Types of Polymerization – Addition and Condensation and Co-Polymerization. Plastics – Thermosetting and Thermoplastics – Preparation, Properties and applications of the following: PVC, Teflon, Bakelite, Nylon 6:6, Polyester and Dacron.

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

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

UNIT III: SURFACE CHEMISTRY

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

UNIT IV: CHEMICAL FUELS

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

UNIT V: LUBRICANTS

Definition and function 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 – Viscosity, flash and fire points, cloud and pour points, aniline point, Neutralization Number and Mechanical Strength.

UNIT-VI: REFRACTORIES AND INSULATORS

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

Text Books:

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

Reference Books:

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

2012-2013

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – II Semester

L	T	P	C
0	0	2	1

CODE: (121EN72)

**ENGLISH LANGUAGE LAB - II
(Common to all Branches)**

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.

Suggested Software:

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

REFERENCES:

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

2012-2013

ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – II Semester

L T P C
0 0 3 2

CODE: (121CS71)

DATASTRUCTURES AND C++ LAB

(Common to all Branches)

1. Write a C program that implement stack and its operations using arrays
2. Write a C program that implement Queue and its operations using arrays.
3. Write a C program that uses Stack operations to perform the following
 - i) Converting infix expression into postfix expression
 - ii) Evaluating the postfix expression
4. Write a C program that uses functions to perform the following operations on singly linked list.:
 - i) Creation ii) Insertion iii) Deletion iv) Traversal
5. Write a C program that uses functions to perform the following operations on doubly linked list.:
 - i) Creation ii) Insertion iii) Deletion iv) Traversal in both ways
6. Write a C program that uses functions to perform the following:
 - i) Creating a Binary Tree of integers
 - ii) Traversing the above binary tree in preorder, inorder and postorder.
7. Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers :
 - i) Linear search ii) Binary search
8. Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
 - i) Bubble sort ii) Quick sort
9. Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
 - i) Insertion sort ii) Merge sort iii) Selection Sort
10. Write a C++ program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read in a,b,c and use the quadratic formula. If the discriminant b^2-4ac is negative, display a message stating that there are no real solutions.
11. A Fibonacci Sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C++ program to generate the first n terms of the sequence.
12. Write a C++ program that checks whether a given string is palindrome or not.

TEXT BOOKS:

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

2012-2013**ECE****SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)****I Year B.Tech – II Semester****L T P C
0 0 3/2 1****Code: (121ME72) ENGINEERING WORKSHOP – II
(Common to all branches except CSE & IT)****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

2012-2013**ECE****SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)****I Year B.Tech – II Semester****L T P C
0 0 3/2 1****Code: (121PH72)****Engineering Physics Lab – II
(Common to all branches)**

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

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

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ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech – I Semester

L T P C
3 1 --- 3

**Code: (121MA05) ENGINEERING MATHEMATICS-III
(ECE, EEE &ME)**

UNIT I**Special Functions:**

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

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

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

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

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

UNIT IV**Interpolation:**

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

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

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

UNIT VI**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).

Text Books :

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

REFERENCE BOOKS:

1. A text Book of KREYSZIG’s Engineering Mathematics, Dr. A. Ramakrishna Prasad, Wiley Publications.
2. A text book of Engineering Mathematics, M. Venkata Krishna, Jaico Publishing House, 2010.

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ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech – I Semester

L	T	P	C
3	2	0	3

CODE: (121MA07) PROBABILITY AND STATISTICS
(Common to All Branches)

UNIT I**Probability**

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

UNIT II**Probability Distributions**

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

UNIT III**Sampling Distributions**

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

UNIT IV**Inferences Concerning Means and Proportions**

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

UNIT V

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

UNIT VI**Linear Programming:**

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

Text Books :

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

REFERENCE BOOKS:

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

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**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – II Semester

L	T	P	C
4	1	0	4

CODE: (121EE43)

**NETWORK ANALYSIS
(Common to ECE & ECM)**

UNIT – I : INTRODUCTION TO ELECTRICAL CIRCUITS:

Circuit concept, R-L-C parameters, Voltage and current sources, Independent and dependent sources, Source transformation, Kirchoff's laws, Network reduction techniques, series, parallel, series – parallel, Star – to –delta and Delta – to – star transformation, Mesh Analysis, Nodal analysis, Super mesh, Super node concept.

UNIT – II: NETWORK TOPOLOGY:

Definitions, Graph, Tree, Basic cutset and Basic Tieset matrices for planar networks, Loop and Nodal methods of analysis of Networks using graph theory, Duality & Dual networks.

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

R.M.S and Average values, 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 self and mutual inductances, Dot convention, Co-efficient of coupling, Series circuit analysis with mutual inductance, Resonance in series and parallel circuits, Concept of band width and Q factor.

UNIT – IV : NETWORK THEOREMS:

Tellegens, Superposition, Reciprocity, Thevenin's, Norton's, Maximum Power Transfer and Millman's Theorems statements and problem solving using dependent and independent sources with D.C. excitation.

UNIT – V : TWO–PORT NETWORKS AND FILTERS:

Z,Y, ABCD and h-parameters, Conversion of one parameter to another parameter, Condition for reciprocity and symmetry, 2 port network connections in series, Parallel and cascaded configurations, Problem solving, Introduction to frequency selective filters (Low pass, high pass, band pass and band elimination filters).

UNIT – VI : TRANSIENT ANALYSIS:

Transient response of R-L, R-C, R-L-C circuits (series combinations only) with D.C. and sinusoidal excitations, Initial conditions, Solution using differential equation approach and Laplace transform methods of solutions.

Text books:

1. Engg Circuit Analysis – William Hayt and Jack E Kemmerly, McGraw Hill 5th Edition, 1993.
2. Circuits & Networks – A.Sudhakar and Shyamamohan S.Palli, Tata McGraw Hill, 3rd edition.

References:

1. Network Analysis - M.E. Vanvalkenberg, 3ed, PHI.
2. Circuit theory (Analysis & Synthesis) – A.Chakravarthy, Dhanpath Rai & Co., 6th edition.

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ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech – I Semester

L T P C
3 1 --- 3

Code: (121EE44)

**ELECTRICAL TECHNOLOGY
(Common to ECE & ECM)**

UNIT – I : D.C. GENERATORS :

Principle of operation, Constructional features, E.M.F equation, Types of D.C generators, build up of e.m.f, O.C. characteristics, Load characteristics of shunt, series and compound generators, simple problems.

UNIT –II : D.C. MOTORS :

D.C.Motors, - Principle of operation, Back E.M.F, Torque equation, Characteristics and application of shunt, series and compound motors, Speed control of D.C. motors, Armature voltage and field flux control methods, Principle of 3 point starter, Losses, efficiency, Simple Problems.

UNIT-III : SINGLE PHASE TRANSFORMERS :

Single Phase Transformers, types, constructional details, E.M.F equation, Operation on no load and on load, Phasor diagrams, Equivalent circuit, Losses and efficiency, Regulation, Predetermination of efficiency and regulation by OC and SC test.

UNIT-IV : POLY PHASE INDUCTION MOTORS:

Introduction to three phase supply, Phase sequence, Y and Δ connected loads, Polyphase induction motors, Construction details of cage and wound rotor machines, Production of a rotating magnetic field, Principle of operation, rotor E.M.F, rotor frequency, rotor reactance, rotor current and pf at standstill and running operation, Torque derivation for standstill and running conditions, Slip – torque characteristics.

UNIT-V: SYNCHRONOUS MACHINES :

Constructional Features of round rotor and salient pole machines, Distribution, pitch and winding factors, E.M.F Equation, Synchronous reactance and impedance, OC and SC tests, Phasor diagram, Regulation by synchronous impedance method.

UNIT – VI : SINGLE PHASE MOTORS:

Single phase induction motor, Constructional features, Double revolving field theory, Split phase motors, Shaded pole motor, Principle of operation of A.C. series motor, Universal motor, Stepper motor and Tacho.

TEXT BOOKS:

1. Electrical Machines – S.K.Battacharya, Tata McGraw – Hill Publishers.
2. Electric Machines – I.J. Nagrath & D.P. Kothari, Tata McGraw – Hill Publishers, 3rd edition, 2004.

REFERENCE BOOKS:

1. Principles of Electrical Engineering – V.K.Mehta, S.Chand Publications.
2. Electrical Technology – Edward Huges, Pearson publishers, 8th edition.

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**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech – I Semester

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4	1	---	4

Code: (121EC07) ELECTRONIC CIRCUIT ANALYSIS**UNIT-I**

MULTISTAGE AMPLIFIERS: Review of Transistor Amplifiers. Review of BJT hybrid π model. Methods of inter stage coupling, N-stage cascaded amplifier, equivalent circuits, Miller's theorem, high input resistance transistor circuits, cascade transistor configuration, CE – CC amplifier, two stage RC coupled J-FET amplifier (common sources configuration)

UNIT-II

FEED BACK AMPLIFIERS AND OSCILLATORS: Fundamentals-classification-effect of feedback in voltage series, voltage shunt, current series and current shunt amplifiers-condition for oscillations RC oscillators-LC oscillators, crystal oscillators and their stability.

UNIT-III

POWER AMPLIFIERS - Class A, B, AB, C, D & S power amplifiers –push pull configuration, complementary symmetry circuits , Harmonic distortion – Conversion efficiency and relative performance

UNIT-IV

TUNED AND RF AMPLIFIERS: single tuned capacitive coupled amplifier, tapped single tuned capacitance coupled amplifier, single tuned transformer coupled amplifier, stagger tuning, wideband tuned amplifiers

UNIT-V

FET AMPLIFIERS: Biasing of JFET - Self bias and fixed bias. Biasing of MOSFETS -. Depletion and Enhancement mode. Analysis of common source, common drain and common gate amplifier configurations – Thermal runaway in MOSFET – MOS Differential amplifier – Analysis.

UNIT-VI

SWITCHING AND IC VOLTAGE REGULATORS : IC 723 Voltage regulators and Three Terminal IC regulators, DC to DC Converter, Switching Regulators, Voltage Multipliers, UPS, SMPS.

Text Books:

1. Integrated electronics-J.Milliman and C.C.Halkias, MC Graw –Hill-1972
2. Electronic Devices and Circuits: T.F.Bogart, j.s.Bearsley, Pearson Edition, 6th edition, 2000
3. Electronic devices and Circuit Theory-Robert L. Boylestad, Louis Nashelsky, 9th ed., 2008, PE

Reference:

1. Electronic Circuit Analysis-K.Lal Kishore, 2004, BSP
2. Microelectronic Circuits – Sedra and Smith-5th ed., 2009, Oxford University Press
3. Electronic Devices and Circuits –S.Salivahanan, N.Suresh Kumar,A Vallavaraj, 2ed., 2009, TMH.

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ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech – I Semester

L T P C
3 1 --- 3

Code: (121EC08)

**SIGNALS AND SYSTEMS
(Common to ECE & ECM)**

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.

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.

UNIT-II

NON- 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.

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.

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

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. Linear Systems and Signal Processing – B.P Lathi Oxford Publications.
2. Signals and Systems – A.V. Oppenheim, A.S. Willsky and S.H. Nawab, PHI, 2nd Edn.
3. Signals and Systems – A.Anand Kumar, PHI.

References:

1. Signals & Systems – Simon Haykin and Van Veen, Wiley, 2nd Edition.
2. Network Analysis – M.E. Van Valkenburg, PHI Publications, 3rd Edn., 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.

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ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech – I Semester

L T P C
0 0 2 2

**Code: (121EN73) FUNCTIONAL AND COMMUNICATIVE WRITTEN ENGLISH
(Common to all branches)**

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. How to build a better vocabulary – Nurnberg Maxwell & Morris Rosenblum: Grand Central Publishing
3. Six weeks to words of power –Funk Wilfred: W.R.Goyal Publishers & Distributors
4. Word power made easy – Norman Lewis
5. How to read better and faster: Norman Lewis, W.R.Goyal Publishers, New Delhi

2012-2013**ECE**

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech – I Semester

L T P C
0 0 3 2

**Code: (121EC71) ELECTRONIC DEVICES AND CIRCUITS LAB
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.
7. Data sheets of p-n junction diode, zener diode, transistor, FET, UJT and SCR

PART B: (For Laboratory examination – Minimum of 13 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

2012-2013**ECE**

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech – I Semester

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Code: (121EC72)

**(BASIC SIMULATION LAB
(Common to ECE & ECM)**

1. Basic Operations on Matrices
2. Generation of various signals and sequences
3. Operations on signals and sequences
4. Finding even, odd, real, imaginary parts of signal
5. Convolution between signals and sequences
- 6 Auto correlation and Cross correlation between signals and sequences
7. Verification of LTI properties for given system
8. Computation of unit sample, unit step and sine response of given LTI system and verify its reliability and stability
9. Gibbs phenomena
10. Fourier Transform of given signal and plot its magnitude and phase spectrum
11. Waveform synthesis using Laplace transforms
12. Locating poles and zeros and plotting pole –zero maps in S-plane and Z-plane for given transfer function
13. Removal of noise by ACF/CCF
14. Sampling theorem verification
15. Extraction of periodic signal masked by noise using Correlation
16. Finding stability of system using inverse Z Transform

**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech. I Sem	L	T	P	C
Code: 121EE94	ELECTRICAL TECHNOLOGY LAB		3	2
	(Common to ECE & ECM)			

From the following experiments any six to be conducted:

1. Verification of superposition and Thevenin's theorems.
2. Verification of maximum power transfer theorem.
3. OC & SC tests on Single – Phase transformer (Predetermination of efficiency and regulation at given power factors).
4. Brake test on 3-phase induction motor (performance characteristics).
5. Speed control of DC shunt motor by
 - a) Armature Voltage Control
 - b) Field flux control method
6. Brake test on DC shunt motor
7. Swinburn's test on DC shunt machine
8. Regulation of alternator by Synchronous impedance method.

II Year B.Tech –II Semester

L	T	P	C
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Code: (121CH03)

ENVIRONMENTAL STUDIES
(Common to all Branches)

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(Chlorophil), 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 disesease, 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, Univ. grants commission, University press.

REFERENCE BOOKS:

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.

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ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

I Year B.Tech – I Semester

L T P C
3 1 ---- 3

Code: 121ME04

BASIC MECHANICAL ENGINEERING

UNIT – I

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

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

UNIT – II

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

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

UNIT – III

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

UNIT – IV

Hydraulic pumps and Turbines: Reciprocating and centrifugal pumps and their applications. Layout of Hydro-electric power plant, Classification of hydraulic turbines, Description and principle of operation of Pelton wheel and Francis turbine (without velocity triangles), Axial flow reaction turbine.

UNIT- V

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

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

UNIT - VI**Mechanical working of metals:**

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

Machine Tools:

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

TEXT BOOKS :

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

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ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech –II Semester

L T P C
3 1 0 3

Code: (121EC09)

**PULSE AND DIGITAL CIRCUITS
(Common to ECE and ECM)**

UNIT –I**LINEAR WAVE SHAPING:**

RC high pass, low pass circuit response for sinusoidal, step, pulse, square, ramp & exponential inputs- Differentiator – Double differentiator – Integrator- RL, RLC ALC, circuits Ringing circuit.

UNIT –II**NON LINEAR WAVE SHAPING:**

Diode clippers- Transistor clipper- clipping at two independent levels – Emitter coupled clipper-comparator- Diode differentiator comparator – Applications of voltage comparators.

Clamping operation – clamping with source, diode resistances- clamping circuits theorem- practical clamping circuits.

UNIT –III**STEADY STATE SWITCHING CHARACTERISTICS OF TRANSISTOR:**

The transistor as a switch – the transistor at cutoff- the transistor in saturation- Analytic expression for transistor characteristics-Analysis of cutoff & saturation regions transistor switching times. Design of transistor switch.

UNIT –IV**TIME BASE GENERATORS:**

General features of time base signals-sweep circuit using a transistor switch- General considerations & principles of miller & boot strap time base generators- the transistor miller time base- the transistor boot strap time base generator- A simple current sweep transistor current time base generator.

UNIT –V**MULTIVIBRATORS:**

Stable states of Bistable Multivibrator A fixed bias transistor Bistable Multivibrator -A self biased transistor Bistable Multivibrator - commutating capacitor – unsymmetric triggering of Bistable Multivibrator - triggering through a unilateral device- symmetrical triggering – Schmitt trigger circuit.

General operation of monostable multivibrator, collector coupled monostable multivibrator - wave forms of collector coupled monostable multivibrator - Emitter coupled monostable multivibrator - triggering of monostable multivibrator Astable multivibrator, collector coupled Astable multivibrator -Emitter coupled Astable multivibrator.

UNIT –VI

SAMPLING GATES: Basic operating principle unidirectional, Bidirectional sampling gates using diodes, transistors- reduction of pedessed sampling scope.

LOGIC GATES: Digital operation of a system- the OR gate- the AND gate- the Not circuit or gate circuit- NAND & NOR gates (DTL Logic) – RTL Logic, TTL logic.

Text Books:

1. Pulse digital and switching wave forms-J. Millman and H. Taub, Tata McGraw-Hill, New Delhi,2001.
2. **Solid State Pulse circuits - David A. Bell, PHI, 4th Edn., 2002 .**

References:

1. Pulse and Digital Circuits – A. Anand Kumar, PHI, 2005.
2. Wave Generation and Shaping - L. Strauss.

2012-2013

ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech –II Semester

L T P C
3 1 0 3

Code: (121EC10) **PROBABILITY THEORY AND STOCHASTIC PROCESS****UNIT-I**

PROBABILITY: Set definitions, sample points and sample spaces, probability of random events, laws of probability, joint, marginal and conditional probabilities, total probability, Bayes Theorem, statistical independence. Probability distribution functions, Probability density functions & probability mass function

UNIT-II

RANDOM VARIABLES: Discrete random variables and, Expected values; Continuous random variables, , complex random variables; moments and characteristic functions.

RANDOM VECTORS:

Joint probability distribution functions, joint probability densities, conditional probability distributions functions, marginal distributions and density functions, conditional probability densities, Expected Value of a Function of Random Variables: Joint Moments, Joint Characteristic Functions, Sum of Two Random Variables, Sum of Several Random Variables, Jointly Gaussian Random Variables, independent random variables. Transformations (functions) of random variables

UNIT-III

RANDOM PROCESSES: Definition: The concept, probabilistic structure, Classification, formal definition. Description: Joint distribution, Analytical description using random variables, Average values: mean, auto-correlation, auto-covariance and 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 stationarity, wide-sense stationarity (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; 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**LINEAR SYSTEMS WITH RANDOM INPUTS:**

Random Signal Response of Linear Systems: System Response – Convolution, Mean and Mean-squared Value of System Response, autocorrelation Function of Response, Cross-Correlation Functions of Input and Output, Spectral Characteristics of System Response: Power Density Spectrum of Response, Cross-Power Density Spectrums of Input and Output, Band pass, Band-Limited and Narrowband Processes, Properties.

UNIT-VI

BASIC APPLICATIONS: Random walk, Brownian motion, Thermal noise, shot noise, Modulation, Cyclostationary process, Band limited 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 edn., 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, Second 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 ed, Prentice-Hall, 2003

2012-2013

ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech – I Semester

L T P C
3 1 --- 3

Code: (121EC06) SWITCHING THEORY AND LOGIC DESIGN

UNIT - I

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

UNIT - II

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

UNIT - III

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

UNIT - IV

Programmable Logic Devices, Threshold Logic: Basic PLD's-ROM, PROM, PLA, and PLD Realization of Switching functions using PLDs.
Threshold Logic: Capabilities and limitations of Threshold gate. Synthesis of threshold functions. Multigate Synthesis.

UNIT - V

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

UNIT - VI

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

Text Books:

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

References:

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

2012-2013

ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech –II Semester

L T P C
3 1 0 3

Code: (121EC12) ELECTROMAGNETIC THEORY AND TRANSMISSION LINES**UNIT- I**

Review of vector analysis and orthogonal coordinate systems. Line, surface, and volume integrals. Curl, divergence and gradient of fields.

UNIT- II

ELECTROSTATICS: Static electric fields, Coulomb's Law, Gauss Law and Applications, Dielectric Constant, Isotropic and Homogeneous Dielectrics, Continuity Equation, Relaxation time, Parallel plate, Coaxial and Spherical capacitors.

UNIT- III

MAGNETOSTATICS: Static magnetic fields, Ampere's Circuital Law, Magnetic Flux Density, Magnetic Scalar and Vector Potentials. Forces due to Magnetic fields, Ampere's Force Law, Inductance and magnetic energy.

UNIT- IV

Maxwell's equations, Faraday's Law and their Application in free space, Electromagnetic waves, uniform plane waves in free space and other transmission (material) media, polarization, Power flow and energy storage; Boundary conditions and boundary value problems.

UNIT- V

Reflection and refraction of EM waves. EM Wave characteristics, Guided waves between parallel Planes, rectangular and circular wave guides, dielectric wave guide. TE, TM, TEM modes of propagation. Power losses in plane conductor. Pointing Theorem.

UNIT- VI

Transmission lines and their Parameters, Low frequency and HF lines, Expressions for Characteristic Impedance and different matching concepts, Propagation constant, Phase and Group velocities, Infinite Line concepts, Lossless/Low loss characterization, conditions for distortion less and Minimum attenuation conditions, Types of loading, SC and OC lines, Reflection coefficient, VSWR

Text Books:

1. W.H.Hayt Jr., Engineering Electromagnetics, Tata Mc-Graw-Hill, 2001.
2. EC Jordan, EM waves and radiating systems, PHI, 1995.
3. Elements of Electromagnetics-Mathew N.O Sadiku, 4ed., 2008, Oxford Univ.Press
4. Transmission Lines and Networks by Umesh Sinha

References:

1. N. Narayana Rao, Elements of Engineering Electro magnetics, Pearson Education, 2006.
2. J.D.Ryder, Networks lines and fields, PHI, 1990

2012-2013**ECE**

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech –II Semester**L T P C****0 0 2 2**

**Code: (121EN74) EFFECTIVE ENGLISH COMMUNICATION AND SOFT SKILLS
(Common to all the branches)**

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.
Body Language – Your success Mantra by Shalini Verma, S Chand, 2006

2012-2013**ECE****SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)****II Year B.Tech –II Semester****L T P C
0 0 0 1****Code: (121EC90) COMPREHENSIVE VIVA-VOCE -I**

The Evaluation for Comprehensive Viva-Voce shall be conducted by a committee consisting of four Senior Faculty members of the Department headed by HOD. The main aim of Comprehensive Viva-Voce is to assess the level of understanding in various subjects studied upto II year II-semester B.Tech. course of study. There are no internal marks for the Comprehensive Viva-Voce. The minimum pass percentage for comprehensive viva-voce-I is 40%.

2012-2013**ECE**

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech –II Semester

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Code: (121EC79) PULSE & DIGITAL CIRCUITS LAB
(Common to ECE &ECM)

Minimum Twelve 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. Study of Logic Gates with discrete components .
6. Sampling Gates.
7. Astable Multivibrator.
8. Monostable Multivibrator.
9. Bistable Multivibrator.
10. Schmitt Trigger.
11. UJT Relaxation Oscillator.
12. Bootstrap sweep circuit.

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 | | |

2012-2013

ECE

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)**

II Year B.Tech –II Semester

L T P C
0 0 3 2

Code: (12IEC77) ELECTRONIC CIRCUIT ANALYSIS LAB**List of Experiments:****I) Design and Simulation in Simulation Laboratory using Multisim OR Pspice OR Equivalent****Simulation Software. (Any Six):**

1. Common Emitter and Common Source amplifier
2. Two Stage RC Coupled Amplifier
3. Current shunt and Feedback Amplifier
4. Cascade Amplifier
5. Wien Bridge Oscillator using Transistors
6. RC Phase Shift Oscillator using Transistors
7. Class A Power Amplifier (Transformer less)
8. Class B Complementary Symmetry Amplifier

II) Testing in the Hardware Laboratory (Six Experiments: 3 + 3):

- A) Any Three circuits simulated in Simulation laboratory
- B) Any Three of the following
 1. Class A Power Amplifier (with transformer load)
 2. Class B Complementary Symmetry Power Amplifier
 3. Class C Amplifier
 4. Single Tuned Voltage Amplifier
 5. Series Voltage Regulator
 6. Shunt Voltage Regulator

Equipments required for Laboratories:

1. For software simulation of Electronic circuits
 - i) Computer Systems with latest specifications
 - ii) Connected in Lan (Optional)
 - iii) Operating system (Windows XP)
 - iv) Simulations software (Multisim/TINAPRO) Package
2. For Hardware simulations of Electronic Circuits
 - i) RPSs
 - ii) CROs
 - iii) Functions Generators
 - iv) Multimeters
 - v) Components

III Year, B. Tech, ECE – I Sem.

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ANALOG COMMUNICATIONS (3C511)

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X	X			X							

After studying this course, the students will be able to

1. Understand need for modulation, Types of analog modulation such as AM, generation and detection.
2. Conduct analysis of DSBSC, SSBSC, and VSB methods in time domain and in frequency domain and develop methods for their modulation and demodulation techniques.
3. Compare the types of angle modulation such as FM, PM and implement their generation and detection methods.
4. Analyze and calculate the effect of noise in AM, DSBSC and SSB systems.
5. Develop block diagrams for transmitters and receivers for AM and FM.
6. Explore various types of Pulse Modulations such as PAM, PPM, PWM, their generation, detection, and applications.

UNIT-I**AMPLITUDE MODULATION:**

Introduction to Analog communications, Need for Modulation, Frequency translation, Amplitude modulation-Time domain and frequency domain representation of AM signals, power and current relations in AM waves. Generation of AM waves: Square law modulator, Switching Modulator, Detection of AM waves: Square law detector, Envelope detector.

UNIT-II**DSBSC & SSBSC MODULATION**

Double sideband suppressed carrier and single sideband modulation- Time domain and frequency domain representation of DSBSC and SSB signals. Generation and Detection of DSBSC, SSB signals. Vestigial sideband modulation. Generation and Detection of VSB signal, Frequency Division Multiplexing, ISB Modulation. Comparison of AM techniques, Commercial Applications of AM.

UNIT-III**ANGLE MODULATION:**

Frequency modulation-Narrowband FM and wideband FM- spectrum of FM signals-Transmission bandwidth of FM. Phase modulation-relationship between FM and PM signals Generation of FM signals-direct(parametric variation method) and indirect(Armstrong method) methods, Detection of FM signals : Frequency discriminators, phase difference discriminators, Phase locked loop, Zero crossing Detector. Comparison of FM & AM, Commercial Applications of FM, PM.

UNIT-IV**NOISE AND DISTORTIONS IN COMMUNICATION :**

Noise in base-band systems-SNR at the output of a base-band system-SNR improvement. Noise in linear CW modulation systems-noise in DSB/SC and SSB systems-noise in AM systems. Noise in angle modulated systems-Output SNR in angle modulated systems- threshold effects in angle modulated systems. Pre-emphasis & De-emphasis,

UNIT-V**TRANSMITTERS AND RECEIVERS :**

Radio Transmitters, Classification of Transmitters, AM Transmitter, FM Transmitter, Frequency stability in FM Transmitter

Radio Receiver-types-Tuned Radio Frequency receivers and super-heterodyne receivers, RF section and characteristics, Intermediate frequency, Image frequency and its rejection ratio, receiver characteristics-Automatic gain control, Tracking & alignment, AM receiver, FM receiver, Amplitude limiting.

UNIT-VI

PULSE MODULATION:

Analog Pulse Modulation: Sampling theorem for base-band and band pass signals, Pulse Amplitude modulation: generation and demodulation, Time Division Multiplexing system, PPM generation and demodulation, PWM, Spectra of Pulse modulated signals

Text Books:

1. Simon Haykin, "Communication Systems", 2nd Edition, John Wiley & Sons
2. K. Sam Shanmugam, "Digital and Analog Communication Systems", John Wiley & Sons
3. Principles of Communication systems –H.Taub & D.Schilling,Gautam sahe,TMH,2007,3rd edition
4. Communication Systems – B.P Lathi,BS Publications,2006
5. R.E. Ziemer and W.H. Tranter, "Principles of Communication", JAICOP Publishing House
6. A.Bruce Carlson, " Communication systems", third edition, MGH,

References:

1. Electronics & Communication System-George Kennedy and Bernard Davis, TMH
2. 2004
3. Dennis Roddy, John Coolen, "Electronic Communications", PHI 1997
4. B.P. Lathi, "Modern Digital and Analog Communication Systems" 3rd Ed. Oxford University Press.
5. Tomasi: Electronic communication: Fundamentals through advanced, Pearson Education
6. 5.Couch: Digital and Analog Communication Systems, Pearson Education
9. 6. P.Ramakrishna Rao,"Analog Communications"1st edition,TMH
10. 7.K N HariBhat& Ganesh Rao, "Analog Communications"2nd edition,pearson publications

III Year B.Tech ECE - I Sem

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LINEAR AND DIGITAL IC APPLICATIONS (3C513)

a	b	c	d	e	f	g	h	i	j	k	L
X	X	X	X								

After studying this course, the students will be able to

1. Demonstrate the concepts of Differential Amplifier and Operational Amplifier and their characteristics.
2. Design the basic circuits using Operational Amplifiers.
3. Explore, design and analyze Filters, Timers, Voltage Controlled Oscillator and Phase Locked Loop.
4. Demonstrate the design and analyze Oscillators, D/A Converters and A/D Converters.
5. Classify and characterize the various Logic Families.
6. Explore the combinational and sequential logic ICs in design of various digital systems.

Unit-I**OPAMP & ITS CHARACTERISTICS**

Differential Amplifiers and its Characteristics. Op-Amp Block Diagram, Ideal OP-AMP Characteristics, DC and AC Characteristics. 741 Op-Amp and its Features and Characteristics. Parameters Measurement: Offset Voltage and Current, Slew Rate and CMRR. Frequency Compensation.

Unit-II**BASIC APPLICATIONS OF OP-AMPS**

Adder/Subtractor, Difference Amplifier, Instrumentation Amplifier, Differentiator, Integrator, V/I & I/V Converters, Comparators, Multivibrators, Square and Triangular Waveform Generators, Clippers, Clampers, Peak Detector, S/H circuit.

Unit-III**FILTERS, TIMERS & PLLs**

Filters: Introduction, Butterworth Filters- First and Second Order Active Filters- LPF, HPF, BPF, BRF. Introduction to 555 Timer, Functional Block, 555 timers as Monostable and Astable Multivibrators and Applications, Schmitt Trigger. Voltage Controlled Oscillator (IC 566), Phase Locked Loop.

Applications: Design of visitors counter using 555 timer.

Unit-IV**OSCILLATORS, D/A AND A/D CONVERTERS**

Oscillators: Introduction, Design and Analysis of Wein Bridge, RC Phase shift Oscillators using op-amp.

D/A Converters: Introduction, Characteristic Parameters, R-2R Ladder, Weighted Resistor, Inverter R-2R type D/A Converter, IC 1408 DAC.

A/D Converters: Introduction, Characteristic Parameters, Counter Type, Dual Slope, Successive Approximation and Flash types A/D Converters.

Unit-V**LOGIC FAMILIES**

Classification of IC Logic Families. Standard TTL NAND & NOR Gate-Analysis & Characteristics, TTL Open Collector Outputs. Tristate TTL. MOS & CMOS Logic, Open Drain and Tristate Outputs. ECL. Comparison of Various Logic Families. IC interfacing, TTL driving CMOS & CMOS driving TTL.

UNIT VII:**TTL-74XX Series ICs: COMBINATIONAL AND SEQUENTIAL CIRCUITS**

Decoders. Priority Encoders, Multiplexers, Arithmetic Circuit ICs-Parallel Binary Adder.

Flip-flops- D flip-flop, JK flip-flop, T flip-flop and Master-slave JK flip-flop. Synchronous and Asynchronous Counters. Decade counters. Universal Shift Register.

Applications: Design of a digital clock.

Text Books -

1. D. Roy Chowdhary, *Linear Integrated Circuits*, New Age Publications (P) Ltd, 2nd Edition, 2003
2. James M. Fiore, *Op-AMPS and Linear Integrated Circuits Concepts and Applications*, Cengage Learning
3. John F. Wakerly, *Digital Design Principles & Practices*, PHI/ Pearson Education Asia, 3rd Ed., 2005.

References -

1. Ramakanth A. Gayakwad, *Op-Amps & Linear ICs*, PHI, 1987.
2. Sergio Franco, *Design with Operational Amplifiers & Analog Integrated Circuits*, McGraw Hill, 1988.
3. R.F.Coughlin & Fredrick Driscoll, *Operational Amplifiers & Linear Integrated Circuits*, PHI, 6th Edition.
4. K. Lal Kishore, *Linear Integrated Circuit Application*, Pearson Educations, 2005.
5. Millman, *Micro Electronics*, McGraw Hill, 1988.
6. C.G. Clayton, *Operational Amplifiers*, Butterworth & Company Publ. Ltd. Elsevier, 1971.

III Year, B. Tech, ECE – I - Sem.

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3	-	-	3

BASIC FRENCH LANGUAGE (3HC41)**(Open Elective-I)**

a	b	c	d	e	f	g	h	i	j	k	L

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

III Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
3	-	-	3

BASIC SPANISH LANGUAGE (3HC51)**(Open Elective-I)**

a	b	c	d	e	f	g	h	i	j	k	L

Unit-I 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.

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.

Unit-II 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.

Grammatical Aspects

Gender and number of nouns and adjectives; the verb 'tener'; interrogative Sentences; demonstrative and qualitative adjectives.

Unit-III 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)

Grammatical Aspects

Qualitative adjectives, forms and usage, gradations, superlative adjectives, Exclamatory sentences; the verb 'gustar', forms and syntax; personal Pronouns; definite and indefinite pronouns, direct object pronouns Prepositions; verbs like 'parecer' and 'encontrar and preferir, their form And syntax, interrogative pronouns.

Unit-IV Functional Aspects

Invitations; accepting and rejecting invitations; how to fix an appointment; Inviting through e-mail or telephone

Grammatical Aspects

Present indicative of irregular verbes, expressions with 'tener' and estar Prepositional pronouns; interrogative sentences

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 brochers, 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

III Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
3	-	-	3

BASIC GERMAN LANGUAGE (3HC46)

(Open Elective-I)

a	b	c	d	e	f	g	h	i	j	k	L

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, ECE – I - Sem.

L	T	P/D	C
3	-	-	3

TECHNOLOGY MANAGEMENT (3ZC06)**(Open Elective-I)**

a	b	c	d	e	f	g	h	i	j	k	L
								X			

Course Objective: The Objective of the course is to expose students to the importance of technology in conduct of business and its skillful management for optimum results.

UNIT I

THE PROCESS OF TECHNOLOGICAL INNOVATION: The Need for Technological Innovation Factors Contributing to Successful Technological Innovation. Creativity and Problem Solving: The Creative Process, Creative Individuals, Main Characteristics, Techniques for Creative Problem Solving

UNIT II

STRATEGIES FOR RESEARCH AND DEVELOPMENT: R&D as A Business, Resource Allocation to R&D, R&D Strategy In the Decision Making Process, Selection and Implementation of R&D Strategy.

UNIT III

FINANCIAL EVALUATION OF RESEARCH AND DEVELOPMENT PROJECTS: The Need For Cost Effectiveness, R&D Financial Forecasts, Risk as a Factor In Financial Analysis, Project Selection Formulae, Allocation of Resources, DCF Techniques of evaluating R&D ventures.

UNIT IV

RESEARCH AND DEVELOPMENT: Programme Planning and Control, Portfolio Planning, Project Planning and Control, Project Termination, Resource Allocation and Management.

UNIT V

NEW PRODUCT DEVELOPMENT: New Product Development as a Competitive Strategy, types of new products, Technology strategies for innovation, New Product Development Process, Tools for efficient product development, performance measures, New product Failures.

UNIT VI

TECHNOLOGICAL FORECASTING FOR DECISION MAKING: The Definition of Technological Forecasting, process of technology, Forecasting Techniques, Organization For Technological Forecasting, Current Status. Transfer of Technology: Modes of technology transfer, effective technology transfer Pricing of technology transfer, price negotiation.

Books Recommended:

1. Tarek Khalil, Management of Technology—The Key to Competitiveness and Wealth Creation, McGraw Hill, Boston, 2006.
2. V.K.Narayanan, Managing Technology and Innovation for Competitive Advantage, Pearson Education, 2006.

References:

1. Norma Harrison & Danny Samson, Technology Management—Text and International Cases, McGraw-Hill International, 2005.
2. IGNOU Course material on Technology Management.
3. P.N.Rastogi, Managing Creativity, Macmillan India Ltd, 2003.
4. William L Miller and Longdon, Morris, Fourth Generation R & D, John Wiley & Sons Inc.
5. Pradip N Khandwalla: Lifelong Creativity—An Unending Fest, Tata McGraw Hill, 2004.
6. Pradip N Khandwalla: Corporate Creativity, Tata McGraw Hill, 2006.
7. White: The Management of Technology & Innovation Thomson, 2007.

III Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
3	-	-	3

ENTREPRENEURSHIP (3ZC04)**(Open Elective-I)**

a	b	c	d	e	f	g	h	i	j	k	L

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

UNIT I

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

UNIT II

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

UNIT III

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

UNIT IV

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

UNIT V

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

UNIT VI

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

Books Recommended:

- H. Nandan, Fundamentals of Entrepreneurship, Prentice Hall of India, First Edition, New Delhi, 2007.
- Robert D Hisrich, Michael P Peters, Dean A Shepherd, Entrepreneurship, Sixth Edition, New Delhi, 2006.

References:

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

III Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	-	-	3

WEB TECHNOLOGIES (3FC09)
(Open Elective – II)

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

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

Application:

UI of web sites: Creation of forms ,frames, and a good user interface , online applications front end

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

Application:

Dynamic behavior to html, interactive web site preparation. In project: used for validation of username, password, popping of fields dynamically, java script is used for the validation of fields like when username is left blank it should give an error message

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

Application:

used for storing configuration details,no predefined tags,used in configuring class details for mapping and database details in hibernate.It focuses on structure of data . In project we have used the xml language in the hibernate configuration file .

UNIT-IV: Importance Web Servers and Application servers in a JAVA based enterprise application development. Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat.

Introduction to **Servlets:** Lifecycle of a Servlet, The Servlet API, The **javax.servlet** package, Reading request parameters, Reading Initialization parameters, reading the context parameters, The **javax.servlet.http** package, Handling Http Request & Responses, Session Tracking using **URL rewriting, Hidden form fields, Cookies, HttpSession**, Security Issues in web Application.

Application:

The term web server, also written as Web server, can refer to either the hardware (the computer) or the software (the computer application) that helps to deliver web content that can be accessed through the Internet.

The most common use of web servers is to host websites, but there are other uses such as gaming, data storage, running enterprise applications, handling email, FTP, or other web uses.

UNIT-V: Introduction to JSP: The Problem with Servlet. The Anatomy of a JSP Page, JSP

Processing: JSP Application Design with MVC.

JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects.

Application:

jsps are used for processing the requests from server,dynamic views

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

Application:

To access database from application, used in almost all web applications .

JDBC is a framework used to access the data from the database

TEXT BOOKS:

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

REFERENCE BOOKS:

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

III Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
3	-	-	3

PRODUCT DESIGN & SERVICE (3B515)**(Open Elective-I)**

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

Unit I : Introduction to Design Thinking:

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

Unit II : Introduction to Service Design:

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

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

Unit III : Introduction to Product Design:

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

Unit IV : Design for Manufacturing

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

Unit V : System & Engg Design:

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

Unit VI : Design Methodology

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

Recommended Text Books:

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

References:

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

III Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
3	-	-	3

JAVA PROGRAMMING (3EC70)
(COMMON TO ME, EEE, BT, ECE)

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

Course Outcomes :

- Understand the concept of OOP as well as the purpose and usage of principles of inheritance, Identify classes, objects, members of a class and the relationships among them needed for a specific problem.
- Understand and implement concepts of polymorphism, encapsulation and method overloading.
- Create Java application programs using sound OOP practices (e.g., interfaces and APIs) and proper program structuring (e.g., by using access control identifiers, automatic documentation through comments)
- Students understand and implement error exception handling and multi-threading.
- Students learn to create GUI and write programs for event-handling using various user interface components on applets.

UNIT-I

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

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

UNIT-II

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

Objective:

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

UNIT-III

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

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

Applications using interface

Applications using packages

Objective:

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

UNIT-IV

Exception handling -exception definition, benefits of exception handling, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating user defined exceptions. Multi-Threading:-Thread definition, types of multitasking, uses of multitasking, thread life cycle, creating threads using Thread class and Runnable interface, synchronizing threads, daemon thread. Applications of multithreading.

Objective:

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

UNIT-V

Advantages of GUI over CUI ,The AWT class hierarchy, Component, Frame, user interface components- labels, button, scrollbars, text components, check box, check box groups, choices, lists panels – scrollpane, menubar, graphics, layout, managers –boarder, grid, flow and card layouts.

Applications: developing calculator, developing feedback form, developing biodata.

Objective:

On the completion of the unit, a student should be able to: i) Understand the advantages of GUI over CUI ii) Write GUI programs

UNIT-VI

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

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

Applications: Developing of simple advertisements.

Objective:

On the completion of the unit, a student should be able to: i) Able to handle events using delegation event model
ii) Write applet programs

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, ECE – I - Sem.

L	T	P/D	C
4	1	-	4

DIGITAL SIGNAL PROCESSING (3CC15)

a	b	c	d	e	f	g	h	i	j	k	L
X	X		X								

After studying this course, the students will be able to

1. To analyze the frequency domain of discrete time signals and systems and can find linearity, time invariant, stability and causality.
2. To perform investigations on periodic signals using Fourier series and compute DFT
3. To apply the knowledge of FFT algorithms to analyze Fourier Transform of DT signals.
4. To analyze the structures of Digital IIR and FIR filters in several forms and also familiar with applications of Z transforms.
5. To design IIR and FIR filters for the given specifications.
6. To understand the concepts of Decimation, Interpolation and sampling rate conversion.

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.
Applications: Design of OFDM system for 4G mobile communication system.

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 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.
Applications: Design of IIR LPF filter with 3 KHz cutoff frequency in 3G.

UNIT VI

MULTIRATE DIGITAL SIGNAL PROCESSING: Decimation, interpolation, sampling rate conversion, Implementation of sampling rate conversion. Applications of Multirate signal processing. Introduction to DSP Processors

TEXT BOOKS:

1. Digital Signal Processing – Alan V. Oppenheim, Ronald W. Schaffer, PHI Ed., 2006
2. Digital Signal Processing, Principles, Algorithms, and Applications: John G. Proakis, Dimitris G. Manolakis, Pearson Education / PHI, 2007.
3. Digital Signal Processing: A Modern Introduction, Ashok Ambardar, 9th Indian Reprint, 2012, Cengage Learning.

REFERENCE BOOKS:

1. Fundamentals and applications, Li-Tan, Elsevier
2. Digital Signal Processing: Andreas Antoniou, TATA McGraw Hill , 2006
3. Digital Signal Processing: MH Hayes, Schaum's Outlines, TATA Mc-Graw Hill, 2007.
4. DSP Primer - C. Britton Rorabaugh, Tata McGraw Hill, 2005.
5. Fundamentals of Digital Signal Processing using Matlab – Robert J. Schilling, Sandra L. Harris, Thomson, 2007
6. Discrete Time Signal Processing – A.V.Oppenheim and R.W. Schaffer, PHI

L	T	P/D	C
3	1	-	3

III Year, B. Tech, ECE – I Sem.

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS (3ZC01)

a	b	c	d	e	f	g	h	i	j	k	L
								X			

UNIT – I: INTRODUCTION TO MANAGERIAL ECONOMICS:

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

UNIT – II: THEORY OF PRODUCTION AND COST ANALYSIS:

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

UNIT – III: INTRODUCTION TO MARKETS:

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

UNIT – IV: FUNDAMENTALS OF FINANCIAL ACCOUNTING:

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

UNIT – V: CAPITAL BUDGETING TECHNIQUES:

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

UNIT – VI: RATIO ANALYSIS:

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

REFERENCES:

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

III Year B.Tech. I Semester

L	T	P/D	C
-	-	2	1

QUANTITATIVE APTITUDE (3HC76)

(Common to All Branches)

a	b	c	d	e	f	g	h	i	j	k	L

Unit I

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

Unit II

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

Unit III

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

Unit IV

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

Unit V

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

Unit VI

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

Text Books:

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

L	T	P/D	C
-	-	3	1

III Year B.Tech. I Semester**GROUP PROJECT (3C591)**

a	b	c	d	e	f	g	h	i	j	k	L
X	X	X	X	X				X	X	X	

Pre-Requisites: All Courses till this semester

After studying this course, the students will be able to:

- i. *use the concepts, in conceptualizing, designing and executing the modules of the projects.*
- ii. *exhibit the interest in learning the modern tools and technologies.*
- iii. *inculcate an enthusiasm to use the creative ideas to build the innovative projects*
- iv. *improve communicative skills and team working skills*

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

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

The **internal evaluation** shall consist of:

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

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

III Year B.Tech.ECE - I Sem

L	T	P/D	C
-	-	4	2

LINEAR AND DIGITAL IC APPLICATIONS LAB (3C573)

a	b	c	d	e	f	g	h	i	j	k	L
X	X	X	X					X			

After completing this course, the students will have demonstrated

- i. An ability to explore the applications of IC 741 OP-AMP.
- ii. An ability to understand and implement generate square and Triangular waveforms using 555 Timers.
- iii. An ability to design D to A converters and its applications
- iv. An ability to implement combinatorial and sequential designs using TTL Ics.

Part A (Linear IC Application Lab):

Verify the operations of the Analog ICs (Hardware) in the Laboratory (At least Six Experiments)

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

Part B (Digital IC Application Lab):

Verify the operations of the Digital ICs (Hardware) in the Laboratory (At least Six Experiments)

8. 3x8 Decoder using IC 74x138
9. 8 x1 Multiplexer using IC 74x151
10. 4-bit Binary Adder using IC 74x283
11. Priority encoder using 74x148
12. D Flip-Flop IC 74x74
13. Decade counter using IC74x90
14. Shift registers using 74x194

III Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
-	-	4	2

ANALOG COMMUNICATIONS LAB (3C574)

a	b	c	d	e	f	g	h	i	j	k	L
X	X		X	X				X			

After completing this lab course, the students will have demonstrated

- i. Implementation of AM , DSBSC AND SSBSC generation and detection methods
- ii. Development of FM generation and detection methods
- iii. Able to conduct Spectral analysis using spectrum Analyzer
- iv. Understand the Receiver Characteristics.
- v. Perform analysis of various modulation and demodulation methods using MATLAB
- vi. Analyze various pulse modulation techniques

1. AM generation and Detection
2. DSB/SC generation and Detection
3. SSBSC Modulation and Demodulation
4. FM generation and detection
5. PLL characteristics and FM demodulation using PLL
6. Study of Spectrum Analyzer and analysis of AM and FM signals
7. Mixer characteristics
8. Preemphasis and Deemphasis
- 9.Receiver Characteristics
10. Simple and delayed AGC characteristics
- 11.Frequency Division Multiplexing
12. Pulse Amplitude Modulation & Demodulation
13. Pulse Width Modulation & Demodulation
14. Pulse Position Modulation & Demodulation

The following experiments are to be simulated using MATLAB

AM,DSBSC, SSB,FM.,PM ,PAM,PWM, PPM,

III Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
-	-	4	2

DIGITAL SIGNAL PROCESSING LAB (3C575)

a	b	c	d	e	f	g	h	i	j	k	L
X	X		X	X				X			

After completing this course, the students will have demonstrated

- i. Design of FIR filter (LP/HP) using windowing technique
- ii. Design of IIR filter using Butterworth and chebyshev approximation.
- iii. To select and apply appropriate technique to Convert Analog filter to Digital Filter
- iv. To perform Down sampling and Up sampling of given sequence
- v. To analyze and generate of DTMF signals .
- vi. To apply appropriate technique on audio application and noise removal
- vii. Understand the architecture of DSP chips and TMS 320C 5X/6X Instructions

LIST OF EXPERIMENTS (Implementation in both MATLAB and CCS)

1. Study the architecture of DSP chips-TMS 320C 5X/6X Instructions.
2. To design FIR filter (LP/HP) using windowing technique
 - a) Using rectangular window
 - b) Using triangular window
 - c) Using Kaiser Window
3. To implement IIR filter (LP/HP/BP)
 - a) Butterworth filter
 - b) Chebyshev Type-I filter
 - c) Chebyshev Type- II filter
4. Program to find frequency response of analog LP/HP filters.
5. To find the DFT/IDFT of given DT signal
6. To find the FFT of given I-D signal and plot.
7. Down sampling and Up sampling of given sequence by specified factor.
8. Conversion of Analog filter to Digital Filter.
 - a) impulse invariant transformation
 - b) bilinear transformation
9. Generation of DTMF signals
10. Audio application such as to plot a time and frequency display of microphone plus a cosine using DSP. Read a wav file and match with their respective spectrograms.
11. Noise removal: Add noise above 3 KHz and then remove, interference suppression using 400 Hz tone.
12. Impulse response of first order and second order systems.

Note: Minimum of 9 experiments has to be conducted

III Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
-	-	3	1

TECHNICAL PAPER WRITING AND SEMINAR-I (3C583)

a	b	c	d	e	f	g	h	i	j	k	L
X	X				X		X	X	X		x

Pre-Requisites: All Courses till this semester

After completing this course:

- i. Students will have performed intensive literature survey on a specific topic of their choice in the electronics & communication engineering referring reputed national, international publications
- ii. Student will learn to arrange the contents of the presentation and scope of the topic, in an effective manner.
- iii. Each student presents the technical topic in front of the panel and the fellow students, using the oratory skills.
- iv. Students also face the questions posed by the panel and classmates

There shall be a Technical Paper writing and seminar evaluated for 25 marks in every semester from III-year I-semester. The evaluation is purely internal and will be conducted as follows:

Paper writing : 05 marks

Final report : 05 marks

Presentation before a departmental committee

consisting of Head, a Senior Faculty and Supervisor : 15 marks

III Year B. Tech. ECE - II Sem

L	T	P/D	C
3	1	-	3

MICROPROCESSORS, MICROCONTROLLERS AND APPLICATIONS (3C630)

a	b	c	d	E	f	g	h	i	j	k	L
X	X		X								

After completing this course, the students will have demonstrated

- Understand the internal architecture, memory organization and operating modes of 8086.
- Develop assembly language programs using different class of instructions and addressing modes.
- Design and develop the interfacing of various modules with 8086.
- Explore the architectural features of 8051 microcontroller.
- Develop programming models using the various classes of instructions using Timer, I/O and serial ports.
- Develop programs to interface real time application modules with 8051 microcontroller.

UNIT - I

Architecture of 8086 Microprocessor: Memory segmentation, BIU and EU. General purpose registers. 8086 flag register and function of 8086 Flags. Pin diagram of 8086-Minimum mode and maximum mode of operation. Timing Diagram.

UNIT – II

Instruction set of 8086: Addressing modes of 8086. Assembly directives. Simple programs, procedures, and macros. Assembly language programs involving logical, Branch & Call instructions, sorting, evaluation of arithmetic expressions, string manipulation. Introduction to DOS and BIOS interrupts.

Applications: Design of an 8-bit Calculator

UNIT - III

Interfacing with 8086: Interfacing with RAMs, ROMs along with the explanation of timing diagrams. 8255 PPI – various modes of operation. Interfacing with key boards, ADCs, and DACs Stepper Motor .Interrupt structure of 8086. Vector interrupt table. Interrupt service routines. 8259 PIC Architecture and interfacing cascading of interrupt controller and its importance.

Applications: Interfacing of a Temperature sensor with 8086

UNIT - IV

The 8051 Architecture: Architecture of 8051 Micro controller, Memory Organization. Special Function Registers. Input/Output Ports and Circuits, External Memory, Counter and Timers, Serial data Input/Output, Interrupts.

UNIT – V

Instruction set of 8051: Programming the 8051, Data Transfer and Logical Instructions. Arithmetic Operations, Decimal Arithmetic. Jump and Call Instructions, Simple programs. Programs based on SFRs on Timers ,Interrupts.

UNIT - VI

Applications of 8051: Interfacing with keyboards, LEDs, 7 segment LEDs, LCDs, Interfacing with ADCs. Interfacing with DACs, 8251 USART Architecture. RS.232, sample programs of serial Data Transfer.

TEXT BOOKS :

1. Advanced microprocessor & Peripherals - A.K.Ray & 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.
4. The 8051 Microcontroller And Embedded Systems Using Assembly And C – Mazidi, Pearson Education India, 2nd edition, 2008.

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.

III Year B.Tech.ECE - I Sem

L	T	P/D	C
3	2	-	3

DIGITAL COMMUNICATIONS (3C617)

a	b	c	d	e	f	g	h	i	j	k	L
X	X		X								

After studying this course, the students will be able to

1. Understand the principle of converting analog signal to digital by using PCM, DM,ADM systems.
2. Understand the baseband transmission and optimal reception of digital signals using different filters and M-ary Error Probabilities.
3. Design and compare ASK,PSK,FSK,DPSK,QPSK modulators and demodulators
4. Understand the concepts of information theory , source coding techniques ,channel capacity and can find channel capacity and coding efficiency.
5. Understand encoding and decoding techniques of different channel coding techniques like ,block codes, cyclic codes, convolutional codes.
6. knowledge on different types of spread spectrum modulation techniques,DSSS,FHSS,CDMA and PN sequence.

UNIT I

ELEMENTS OF DIGITAL COMMUNICATION SYSTEMS: Model of Digital Communication Systems, Advantages of digital communication systems, Digital Representation of Analog signal, Sampling Theorem.

PULSE CODE MODULATION: PCM Generation and Reconstruction, Quantization Noise, Non uniform Quantization and Companding, DPCM, DM, Noise in DM, ADM.

Applications: Design of E-1 and T-1 carrier systems

UNIT II

BASE BAND DIGITAL TRANSMISSION Digital Signals and Systems , Digital PAM Signals, Transmission, limitations, Power Spectra of Digital PAM, Spectral Shaping by Precoding ,Noise and Errors, Binary Error Probabilities, Regenerative Repeaters, Matched Filtering, Correlation Detection, M-ary Error Probabilities. Band Limited Digital PAM Systems ,Nyquist Pulse Shaping, Optimum Terminal Filters, Correlative Coding, Synchronization techniques ,scrambling and descrambling.

UNIT III

DIGITAL MODULATION TECHNIQUES: Introduction, optimum receiver for binary digital modulation schemes, ASK, ASK Modulator, Non-coherent and Coherent ASK Detector, FSK, Bandwidth and Frequency spectrum of FSK, FSK Modulator, Non-coherent and Coherent FSK Detector, FSK Detection using PLL, BPSK, Coherent PSK Detection, QPSK, DPSK, Definition of BER, calculation of error probability of ASK, BPSK, BFSK,QPSK,Comparison of Digital modulation systems.

Applications: Design of MODEM for voice transmission

UNIT IV

INFORMATION THEORY: Information and entropy, mutual information, information rate.

SOURCE CODING: Introduction, Advantages, Shannon's theorem for Channel capacity, Huffman code, Shannon-Fano coding, bandwidth –S/N trade off.

UNIT V

CHANNEL CODING: Linear Block Codes, Error detection and correction capabilities of Linear Block Codes, Hamming Code, Cyclic Codes: Encoding, syndrome calculation, Decoding, Convolution Codes: Encoding, Decoding using State, tree and trellis diagrams, Decoding using Viterbi algorithm.

UNIT VI

SPREAD SPECTRUM MODULATION: Use of Spread Spectrum, DSSS-CDMA, FHSS-CDMA, PN-sequences: Generation and Characteristics.

TEXT BOOKS :

1. B. P. Lathi, *Modern Analog and Digital Communication*, 3rd Ed., Oxford University Press
2. K. Sam Shanmugham, *Digital and Analog Communication Systems*, John Wiley & Sons
3. H. Taub and D. Schilling, *Principles of Communication Systems* –, TMH, 2003
4. A. Bruce Carlson, & Paul B. Crilly, “*Communication Systems – An Introduction to Signals & Noise in Electrical Communication*”, McGraw-Hill International Edition, 5th Edition, 2010.

REFERENCES :

1. Simon Haykin, *Digital communications* -, John Wiley, 2005
2. John Proakis, *Digital Communications* –, TMH, 1983.
3. Singh & Sapre, *Communication Systems Analog & Digital* –, TMH, 2004.
4. Sklar: *Digital Communication*, 2nd Ed., Pearson Education

III Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	-	-	3

BANKING OPERATIONS, INSURANCE AND RISK MANAGEMENT (3ZC03)

(Open Elective – II)

a	b	c	d	e	f	g	h	i	j	k	L
								X			

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

UNIT I

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

UNIT II

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

UNIT III

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

UNIT IV

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

UNIT V

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

UNIT VI

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

Books Recommended:

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

References:

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

III Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	-	-	3

NEURAL NETWORKS & FUZZY LOGIC (3FC10)**(Open Elective – II)**

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

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

Feed-forward 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 Auto-associative 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 by George J. Klir/ Bo Yuan, Printice Hall of India P Ltd.
2. Artificial Neural Networks by B. Vegnanarayana, Printice Hall of India P Ltd.

REFERENCES

1. Artificial Intelligence 2nd Edition by E.Rich and K.Knight (TMH).
2. Artificial Intelligence and Expert Systems by Patterson, PHI.
3. Expert Systems: Principles and Programming- Fourth Edn by Giarrantana/ Riley, Thomson.
4. PROLOG Programming for Artificial Intelligence - Third Edition by Ivan Bratka, Pearson Education.

5. Neural Networks by Simon Haykin PHI
6. Artificial Intelligence - 3rd Edition by Patrick Henry Winston, Pearson Edition.

III Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	-	-	3

GENERAL MANAGEMENT AND ENTREPRENEURSHIP (3ZC05)**(Open Elective – II)**

a	b	c	d	e	f	g	h	i	j	k	L
								X			

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

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

UNIT I

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

UNIT II

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

UNIT III

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

UNIT IV

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

UNIT V

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

UNIT VI

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

Books Recommended:

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

References:

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

III Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	-	-	3

FUNDAMENTALS OF DISASTER MANAGEMENT (3ZC07)
(Open Elective – II)

a	b	c	d	e	f	g	h	i	j	k	L
								X			

Course Objectives:

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

UNIT I**INTRODUCTION TO DISASTERS**

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

UNIT II**GLOBAL TRENDS IN DISASTERS:**

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

UNIT III

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

UNIT IV

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

UNIT V

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

UNIT VI

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

Books Recommended:

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

References:

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

Suggested Reading List:

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

III Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	-	-	3

DATABASE SYSTEMS (3FC19)**(Open Elective – II)**

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

UNIT I :Data Base Systems:

Data Vs Information, Data base System Applications, data base System VS file System – View of Data – Data Abstraction –Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor, History of Data base Systems.

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

Application- ER diagram for a tiny college

UNIT II:

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

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

Application-Student database design.

UNIT III:

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

Application-working with Aviation company database.

UNIT IV:

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

Application-Faculty Evaluation Report.

UNIT V :

Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation – Testing for serializability- Lock –Based Protocols – Timestamp Based Protocols- Validation- Based Protocols – Multiple Granularity, Recovery and Atomicity – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage-Advance Recovery systems- Remote Backup systems,

Application-Production Management System.

UNIT VI :

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

. TEXT BOOKS :

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

REFERENCES :

1. Data base Systems design, Implementation, and 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

III Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	-	-	3

PROJECT MANAGEMENT & FINANCE (3ZC12)

(Open Elective – II)

a	b	c	d	e	f	g	h	i	j	k	L
								X			

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

UNIT I

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

UNIT II

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

UNIT III

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

UNIT IV

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

UNIT V

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

UNIT VI

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

Books Recommended:

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

References:

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

III Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	1	-	3

CONTROL SYSTEMS (3AC07)

a	b	c	d	e	f	g	h	i	j	k	L
X	X		X								

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 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 its Properties.

TEXT BOOKS:

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

REFERENCES:

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

L	T	P/D	C
3	2	-	3

III Year, B. Tech, ECE – II - Sem.**ANTENNAS AND WAVE PROPAGATION (3C514)**

a	b	c	d	e	f	g	h	i	j	k	L
X	X		X								

After studying this course, the students will be able to

1. Acquaint basic knowledge applying basics ,analyse for involvement in system design, having a tangibility about applicable engineering solutions, besides maintaining compatible with multidisciplinary activities and feel on lifelong learning about review of electromagnetic and antenna characteristics.
2. Attain communicative familiarity based on scientific ground , analyse for involvement in system design of wire antennas. Acquaint communicative basic knowledge applying basics ,analyse for involvement in system design with a tangibility about applicable engineering solutions with life long learning attitude about antenna arrays.
3. Obtain knowledge on fundamentals such as magnetic currents, method of images etc, and analyse engineering problems with design involvement with life long learning interest on aperture antennas such as Horn, parabolic and lens antennas.
4. Procure knowledge on horizontal polarized antennas, helical antennas , patch antennas etc. with necessary communication skills on antenna measurements and appropriate design techniques for effective use of yagi arrays etc.
5. Familiarise ground wave and space wave propagation concepts via applying fundamentals of science with a vision on design and life long learning of space wave concepts.
6. Analyse concepts of sky wave propagation with life long learning attitude on improvement of concepts on ionosphere and fading problems.

UNIT I**FUNDAMENTAL PARAMETERS OF ANTENNAS**

Review of Electromagnetic Theory: Vector Potential, Solution of Wave Equation, Retarded Case, Hertzian Dipole. Antenna Characteristics: Radiation Pattern, Beam Solid Angle, Directivity, Gain, Input Impedance, Polarization, Bandwidth, Reciprocity, Equivalence of Radiation Patterns, Equivalence of Impedances, Effective Aperture, Vector Effective Length, Antenna efficiency.

UNIT-II**LINEAR WIRE ANTENNAS AND ARRAYS**

Wire Antennas: Short Dipole, Radiation Resistance and Directivity, Half Wave Dipole, Monopole, Small Loop Antennas. Antenna Arrays: Linear Array and Pattern Multiplication, Two-Element Array, Uniform Array, BSA and EFA, EFA With increased Directivity. BSA with Non- uniform Amplitude Distributions and Binomial Arrays.

UNIT-III**APERTURE AND REFLECTOR ANTENNAS**

Magnetic Current and its Fields, Uniqueness Theorem, Field Equivalence Principle, Duality Principle, Method Of Images, Pattern Properties, Slot Antenna, Horn Antenna, Pyramidal Horn Antenna, Reflector Antenna-Flat Reflector, Corner Reflector, Common Curved Reflector Shapes, Lens Antenna.

Applications: Design of parabolic reflector for DTH.

UNIT-IV

Long Wire, V and Rhombic Antenna, Yagi-Uda Antenna, Turnstile Antenna, Helical Antenna- Axial Mode Helix, Normal Mode Helix, Biconical Antenna, Log Periodic Dipole Array, Spiral Antenna, Microstrip Patch Antennas. Antenna Measurements: Radiation Pattern Measurement, Gain and Directivity.

Applications: Design of a 3-element Yagi guda Antenna for television reception for given specifications

UNIT-V

Surface Wave Propagation-Modes of Wave Propagation-Surface Wave Propagation and Surface Wave Tilt-Plane Earth Reflection, Reflection and Refraction of Waves-Field Strength due to Ground Wave-Multi-Hop Transmission. Tropospheric and Space Wave Propagation

UNIT-VI

Ionospheric Propagation: Structure of Ionosphere-Measures of Ionosphere Propagation-Critical Frequency-Angle of Incidence-MUF And LUF ,Optimum Working Frequency-Skip Distance, Virtual Height , Refractive Index of The Ionosphere, Effect of the Earth Magnetic Field and Fading

TEXT BOOKS:

1. Antennas for All Applications – John D. Kraus and Ronald J. Marhefka, TMHI, 3rd Edn., 2003.
2. Electromagnetic Waves and Radiating Systems – E.C. Jordan and K.G. Balmain, PHI, 2nd ed., 2000.

REFERENCES:

1. Antenna Theory - C.A. Balanis, John Wiley & Sons, 2nd ed., 2001.
2. Antennas and Wave Propagation – K.D. Prasad, Satya Prakashan, Tech India Publications, New Delhi, 2001.
3. Transmission and Propagation – E.V.D. Glazier and H.R.L. Lamont, The Services Text Book of Radio, vol. 5, Standard Publishers Distributors, Delhi.
4. Electronic and Radio Engineering – F.E. Terman, McGraw-Hill, 4th edition, 1955.
5. Antennas – John D. Kraus, McGraw-Hill, SECOND EDITION, 1988.

III Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	1	-	3

TELECOMMUNICATION SWITCHING SYSTEMS AND NETWORKS (3C622)
(PROFESSIONAL ELECTIVE – I)

a	b	c	d	e	f	g	h	i	j	k	L
X	X		X								

After studying this subject, the student will be able to

1. Understand evolution of telecommunications and knowledge about switching systems.
2. Analyze about traffic measurement parameters like delay, Erlangs, queue capacity, kendalls notation and queuing models.
3. Design and develop a time division switching network and multiplexed switching networks.
4. Explore different call processing functions, stored programming control concepts.
5. Understand and design signaling concepts and common channel signaling systems.
6. Understand and design principle of packet switching and knowledge of ISDN, different digital networks

UNIT I
SWITCHING SYSTEMS

Evolution of Telecommunications, Basics of a Switching System; Functions of a Switching System; Strowger Switching Components; Step by Step Switching; Design Parameters; 100 Line Switching System; 1000 Line Blocking Exchange; 10,000 Line Exchange; Crossbar Switching- Principle of Crossbar Switching; Crossbar Switch Configurations; Cross-Point Technology; Crossbar Exchange Organization; A General Trunking; Electronic Switching; Read Electronic Systems; Digital Switching Systems

UNIT-II
TELECOMMUNICATIONS TRAFFIC

Introduction; The Unit of Traffic; Congestion; Traffic Measurement; A Mathematical Model; Lost-Call Systems-Theory; Traffic Performance; Loss Systems in Tandem; Use of Traffic Tables; Queuing Systems-The Second Erlang Distribution; Probability of Delay; Finite Queue Capacity; Some Other Useful Results; Systems with a single Server; Queues in Tandem; Delay Tables; Applications of Delay Formulae. Kendalls Notation, queuing models.

Applications: Design of a Queue Model with for voice transmission.

UNIT-III
TIME DIVISION SWITCHING

Basic Time Division Space Switching; Basic Time Division Time Switching; Time Multiplexed Space Switching; Time Multiplexed Time Switching; Combination Switching; Three Stage Combination Switching. Introduction to Switching Networks.

UNIT-IV
CONTROL OF SWITCHING SYSTEMS

Introduction; Call Processing Functions- Sequence of Operations; Signal Exchanges: State Transition Diagrams: Common Control; Reliability Availability; and Security; Stored Program Control.

UNIT-V
SIGNALING

Introduction; Customer Line Signaling; Audio Frequency Junctions and Trunk Circuits; FDM Carrier Systems; Out band Signaling; In band Signaling; PCM Signaling; Inter Register Signaling; Common Channel Signaling; Principles- General Signaling Networks; CCITT Signaling System No. 7, The High Level Data Link Control Protocol ; Signaling Units ;The Signaling information field.

UNIT-VI
PACKET SWITCHING& NETWORKS

Introduction; Statistical Multiplexing, Local & Wide area Networks – Bus Network; Ring Networks; Comparison; Optical fiber Networks; Large Scale Networks; Datagram and Virtual Circuits; Routing; Flow Control; Standards; Flame Relay; Broadband Networks; ATM Switches.

Networks: Introduction: Analog Networks; Integrated Digital Networks; ISDN; Cellular Radio Networks; Intelligent Networks; Private networks; Charging; Routing; Automatic Alternate Routing.

Applications: Design of switching circuit for a packet transmission rate of 1000 packets per second.

Text Books

1. Thyagarajan Viswanath *Tele communication switching system and networks* , PHI, 2000.
2. Wayne Tomasi, *Advanced electronic communications systems*, PHI, 2004.

References

1. J. Bellamy, *Digital Telephony*, John Wiley, 2nd edition, 2001.
2. Achyut. S. Godbole, *Data Communications & Networks* TMH, 2004.
3. H. Taub & D. Schilling, *Principles of Communication Systems*, TMH, 2nd Edition, 2003.
4. B.A. Forouzan, *Data Communication & Networking* TMH, 3rd Edition, 2004.
5. J E Flood, *Telecommunication switching, Traffic and Networks*, Pearson Education, 2002.

III Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	1	-	3

SATELLITE COMMUNICATIONS (3C623)**(PROFESSIONAL ELECTIVE – I)**

a	b	c	d	e	f	g	h	i	j	k	L
X	X		X								

On the completion of the course, Students will be able to

1. Demonstrate the orbital mechanics.
2. Design the satellite subsystem.
3. Formulate the C/N and able to measure the relevant values.
4. Design the satellite link.
5. Apply the knowledge of GPS in real time applications.

UNIT I**INTRODUCTION**

Origin of Satellite Communications, Historical Back-ground, Basic Concepts of Satellite Communications, Kepler's laws of orbital motion. Frequency allocations for Satellite Services, Applications, Future Trends of Satellite Communications.

ORBITAL MECHANICS AND LAUNCHERS

Orbital Mechanics, Look Angle determination, Orbital perturbations, Orbit determination, launches and launch vehicles, Orbital effects in communication systems' performance.

UNIT-II**SATELLITE SUBSYSTEMS**

Attitude and orbit control system, telemetry, tracking, Command and monitoring, power systems, communication subsystems, Satellite antenna Equipment reliability and Space qualification.

UNIT-III**SATELLITE LINK DESIGN**

Basic transmission theory, system noise temperature and G/T ratio, Design of down link and up link.

UNIT-IV**MULTIPLE ACCESS**

Frequency division multiple access (FDMA) Intermediation, Calculation of C/N. Time division Multiple Access (TDMA) Frame structure, Examples. Satellite Switched TDMA. Onboard processing, DAMA, Code Division Multiple access (CDMA), Spread Spectrum transmission and reception.

Applications: Design of a Remote sensing satellite in IRS-4.

UNIT-V**EARTH STATION TECHNOLOGY**

Introduction, Transmitters, Receivers, Antennas, Tracking systems, Terrestrial interface, Primary power test methods.

LOW EARTH ORBIT AND GEO-STATIONARY SATELLITE SYSTEMS: Orbit consideration, coverage and frequency considerations, Delay & Throughput considerations, System considerations.

UNIT-VI**SATELLITE NAVIGATION & THE GLOBAL POSITIONING SYSTEM**

Radio and Satellite Navigation, GPS Position Location principles, GPS Receivers and codes, Satellite signal acquisition, GPS Navigation Message, GPS signal levels, GPS receiver operation, GPS C/A code accuracy, Differential GPS.

Text Books

1. Satellite Communications – Timothy Pratt, Charles Bostian and Jeremy Allnut, WSE, Wiley Publications, 2nd Edition, 2003.
2. Satellite Communications Engineering – Wilbur L. Pritchard, Robert A Nelson and Henri G.Snyderhoud, 2nd Edition, Pearson Publications, 2003.

References

1. Satellite Communications Design Principles – M. Richharia, BS Publications, 2nd Edition, 2003.
2. Satellite Communication - D.C Agarwal, Khanna Publications, 5th Ed.
3. Fundamentals of Satellite Communications – K.N. Raja Rao, PHI, 2004
4. Satellite Communications – Dennis Roddy, McGraw Hill, 2nd Edition.

III Year B. Tech. ECE - II Sem

L	T	P/D	C
3	1	-	3

COMPUTER ORGANIZATION (3DC03)
(PROFESSIONAL ELECTIVE – I)

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

UNIT - I

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

UNIT - II

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

UNIT - III

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

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

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.
3. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI.

REFERENCES :

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

III Year B.Tech. II- Semester

L	T	P/D	C
-	-	2	1

LOGICAL REASONING (3HC77)
(Common to All Branches)

a	b	c	d	e	f	g	h	i	j	k	L

Unit – I

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

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

Unit – II

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

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

Unit – III

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

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

Unit – IV

Directions, Arithmetical Reasoning.

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

Unit – V

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

Cubes and Dice – Analytical Reasoning .Logical Deduction: Logic, Statement – Arguments,

Unit – VI

Clocks & Calendar .Data Sufficiency and Syllogism.

Text Book: Verbal and Non Verbal Reasoning by R.S.Agarwal.

III Year B. Tech. ECE - II Sem

L	T	P/D	C
-	-	-	I

COMPREHENSIVE VIVA-VOCE-II (3C692)

a	b	c	d	e	f	g	h	i	j	k	L
X	X							X			

Pre-Requisites: All Courses till this semester

On completion:

- i. Students are assessed on the courses they have undergone till the completion of that academic year.*
- ii. Students are required to comprehend the concepts in the core subjects and the elective subjects, to make them ready to face technical interviews which improve their employability skills.*

There shall be a Comprehensive Viva-Voce in every II Semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of an External Examiner, Head of the Department and two Senior Faculty members of the Department.

The Comprehensive Viva-Voce is aimed to assess the students' understanding in various subjects he/she studied during the B.Tech course of study till II-semester. 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. ECE - II Sem

L	T	P/D	C
-	-	4	2

Microprocessors, Microcontrollers and Applications Lab (3C682)**LIST OF PROGRAMS**

a	b	c	d	e	f	g	h	i	j	k	L
X	X		X					X	X		X

After studying this course, the students will be able to

1. Familiarize the architecture of 8086 processor and apply the knowledge of mathematics and science in assembly language programming
2. Design a interface modules using 8255 to form a complete computer system.
3. The student can also understand of 8051 Microcontroller concepts, architecture, programming. Perform investigations and design realtime applications.
4. Student will be able to offer engineering solutions by knowing the concepts of Microprocessor and Microcontrollers

**Introduction to MASM/TASM, KIEL Assemblers
Familiarization with 8086, 8051 Kits**

Cycle - I**8086 ALP using kit and MASM**

1. Basic arithmetic and logical operations
2. Code conversion decimal arithmetic programs
3. String manipulation programs
4. Display a message on the screen of a computer using DOS / BIOS interrupts.

Cycle – II**Following peripherals and interfacing experiments to be implemented on 8086 and 8051 kits**

1. A/D and D/A interfacing
2. Serial interfacing with PC
3. Keyboard and display interfacing
4. Stepper motor controller
5. Traffic light controller
6. Real Time clock interface with 8051 using I²C

Following simple programs may be given as lab assignment for students to executive at home by using 8086 emulator like EMU86 or MASM.

Write ALP and execute the program to

1. Find square of a number
2. Find cube of a number
3. Exchange two numbers
4. Add a given series of numbers
5. Find average of a given series of numbers
6. Add a constant to a series of values in memory & store the result back in memory
7. Find sum of squares of a given series of numbers
8. Find sum of cubes of a given series of numbers
9. Display squares of a given series of numbers in memory
10. Find factorial of a given number
11. Find largest number from a given series of numbers
12. Find smallest number from a given series of numbers
13. Sort a series of given numbers in ascending order
14. Sort a series of given numbers in descending order
15. Find whether the given number is even or odd number
16. Find the no. of odd & even numbers from a given series of numbers

17. Find sum of all even no.s from a given series of even and odd numbers
18. Find sum of all odd no.s from a given series of even and odd numbers
19. Find GCD of two given numbers
20. Find LCM of two given numbers
21. Add two 3 x 3 matrices
22. Display Fibonacci series

L	T	P/D	C
-	-	4	2

III Year B.Tech.ECE - II Sem**DIGITAL COMMUNICATION LAB (3C680)**

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

After studying this lab, the students will be able to

1. Understand the Practical concepts of converting analog signal to digital signal by using PCM, DM,ADM circuits of Modulator and demodulator.
2. Investigation of various kinds of Noises arises in PCM,DM using DSO's
3. Design and analyze ASK, FSK, PSK, DPSK, QPSK modulators and demodulators.
4. Design of modulator and demodulator using MAT Lab Simulation Tool.
5. Observe the Spectrum of digital Systems using Spectrum analyzer

LIST OF EXPERIMENTS (Any 12 experiments to be performed)

1. Sampling Theorem – Verification.
2. Time Division Multiplexing.
3. Pulse Code Modulation.
4. Differential Pulse Code Modulation.
5. Delta Modulation.
6. Adaptive Delta Modulation.
7. Line Coding Techniques
8. Amplitude Shift Keying
9. Frequency Shift Keying.
10. Phase Shift Keying .
11. Differential Phase Shift Keying.
12. Quadrature Phase Shift Keying.
13. QAM

The following experiments are to be simulated using MATLAB

1. μ -LAW Companding
2. DPCM Encoding and Decoding
3. Delta modulation
4. Eye diagram measurements on simulated signals.
5. Design of ASK, PSK,FSK. and QPSK MATLAB
6. Error Control Coding

III Year B.Tech.ECE - II Sem

L	T	P/D	C
-	-	3	1

TECHNICAL PAPER WRITING AND SEMINAR-II (3C684)

a	b	c	d	e	f	g	h	i	j	k	L
X	X				X		X	X	X		x

Pre-Requisites: All Courses till this semester

Course Outcomes:

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

There shall be a Technical Paper writing and seminar evaluated for 25 marks in every semester from III-year I-semester. The evaluation is purely internal and will be conducted as follows:

Paper writing : 05 marks

Final report : 05 marks

Presentation before a departmental committee
consisting of Head, a Senior Faculty and Supervisor : 15 marks

IV Year B. Tech. ECE - I Sem

L	T	P/D	C
3	1	-	3

VLSI TECHNOLOGY AND DESIGN (3C731)

a	b	c	d	e	f	g	h	i	j	K	l
X	X	X	X	X							

After completing this course, the students will be able to

- To understand the various existing device technologies and the IC fabrication process
- To analyze the basic electrical properties of the devices and its applications in the development of MOS circuits.
- To investigate the various layout design rules and implement it with the help of CAD tools.
- To explore the effect of parasitic on IC power and performance.
- To evaluate and comprehend the design of memory cells and basic data path units
- To evaluate the need for testing and verification in IC designs.

UNIT I

INTRODUCTION TO MOS TECHNOLOGIES: MOS, PMOS, NMOS, CMOS & BiCMOS

INTRODUCTION TO IC TECHNOLOGY AND FABRICATION PROCESS: VLSI Design Flow, Oxidation, Lithography, Diffusion, Ion Implantation, Metallisation, Encapsulation, Probe testing, Integrated Resistors and Capacitors [T1-CH1, 2 & 3].

Application – CMOS IC Manufacturing

UNIT II

BASIC ELECTRICAL PROPERTIES: Basic Electrical Properties of MOS and BiCMOS Circuits: Ids-Vds relationships, MOS transistor threshold Voltage, gm, gds, Figure of Merit (ω_0), Z_{pu}/Z_{pd} , Latch-Up in CMOS, Pass Transistors [T1-CH2]

INVERTERS: NMOS Inverter, Various Pull-Ups, CMOS Inverter Analysis and Design, Bi-CMOS Inverters [T1-CH2]

UNIT III

CIRCUIT DESIGN PROCESSES: MOS Layers, Stick Diagrams, Lambda-based CMOS Design rules for Wires, Contacts and Transistors, Layout Diagrams for NMOS and CMOS Inverters and Gates, Scaling of MOS circuits, Limitations of Scaling. [T1-CH3]

GATES: CMOS Logic Gates and Structures, Switch logic, Layout Diagrams Gates [T1-CH5]

Application – IC Physical Design – NAND and NOR

UNIT IV

DELAYS: Sheet Resistance R_s and its concept to MOS, Area Capacitance Units, Calculations - C_g , τ -Delays, Driving large Capacitive Loads, Wiring Capacitances, Fan-in and fan-out [T1- CH 4 & 5, T2-CH4]

UNIT V

MEMORY AND SUBSYSTEM DESIGN: Latches and Registers [T2-CH7], Clocking strategies (Single Phase) [T1-CH5.5], Memory cells (SRAM & DRAM), Adders, Shifter, Multipliers and ALUs [T1- CH8]

Applications – SRAM Based FPGAs and Multiply and Accumulate (MAC) Units

UNIT VI

INTRODUCTION TO CMOS TESTING: CMOS Testing, Need for testing, Test Principles, Design Strategies for Test, Chip level Test Techniques, System-level Test Techniques [T1-CH7]

Applications – Implementation of basic ATPG

TEXTBOOKS:

1. Principles of CMOS VLSI Design - Weste and Eshraghian, Pearson Education, Second Edition, 2009.
2. Digital Integrated Circuits: A Design Perspective - John M. Rabaey, 2/E, 2002

REFERENCES:

1. Chip Design for Submicron VLSI: CMOS Layout & Simulation, - John P. Uyemura, Thomson Learning.
2. Introduction to VLSI Circuits and Systems - John .P. Uyemura, JohnWiley, 2003.
3. Essentials of VLSI circuits and systems – Kamran Eshraghian, Eshraghian Douglas and A. Pucknell, PHI, 2005 Edition.
4. Modern VLSI Design - Wayne Wolf, Pearson Education, 3rd Edition, 1997.
5. VLSI Technology – S.M. SZE, 2nd Edition, TMH, 2003.

IV Year B. Tech. ECE - I Sem

MANAGEMENT SCIENCE (3ZC02)											L	T	P/D	C	
a	b	c	d	e	f	g	h	i	j	k	L	3	1	-	3
								X							

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.

IV Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
3	1	-	3

MICROWAVE ENGINEERING (3C720)

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

After studying this course, the students will be able to

1. Understand Microwaves and their applications and Apply the **knowledge of mathematics** in the analysis of Wave guides.
2. **Design** various passive component and to solve various problems using scattering parameters.
3. **Analyze** different active electron beam devices and to apply the **knowledge of mathematics to derive bunching factor, power output, efficiency of the "o" type and "M" type tubes.**
4. Extend the concepts of Basic solid state devices to microwaves.
5. Demonstrate the behavior of various parameters on a experimental set-up.

UNIT-I**MICROWAVE TRANSMISSION LINES**

Introduction, Microwave Spectrum and Bands, Applications of Microwaves. Rectangular Waveguides – TE/TM mode analysis, Cut-off Frequencies, Dominant Modes, Mode Characteristics – Phase and Group Velocities, Wavelength and Impedance Relations; Dominant and evanescent modes; Power Transmission and Power Losses in Rectangular Wave Guide, Related Problems.

CIRCULAR WAVEGUIDES: Introduction, Nature of Fields, Characteristic Equation, Dominant and Degenerate Modes. Impossibility of TEM mode.

UNIT-II**MICRO STRIP LINES WAVEGUIDE COMPONENTS AND APPLICATIONS**

Introduction to micro strip lines, losses, Coupling Mechanisms – Probe, Loop, Aperture types. Waveguide Discontinuities – Waveguide irises, Tuning Screws and Posts. Matched Load, Waveguide Attenuators, Phase Shifters. Waveguide Multiport Junctions – E and H plane Tees, Magic Tee, Hybrid Ring; Directional Couplers. Scattering Matrix– Significance, Formulation and Properties, Directional Coupler, Magic Tee, Circulator and Isolator. Related Problems.

Ferrite Components: Ferrite Characteristics, Faraday rotation, Gyrotator, Isolator, and Circulator

Applications: Design of a micro-strip line for given specifications.

UNIT-III**MICROWAVE TUBES**

Limitations and Losses of conventional tubes at microwave frequencies. Microwave tubes – O type and M type classifications. O-type tubes : 2 Cavity Klystrons – Structure, Reentrant Cavities, Velocity Modulation Process and Applegate Diagram, Bunching Process. O/P Power and Efficiency, Reflex Klystrons – Structure, Applegate Diagram and Principle of working, Bunching process, Power Output, Efficiency Electronic Admittance; Oscillating Modes and o/p Characteristics, Related Problems.

UNIT-IV**TWT and Magnetron**

Significance, Types and Characteristics of Slow Wave Structures; Structure of TWT and Amplification Process (qualitative treatment), Suppression of Oscillations, Gain Considerations. four propagation constants.

M-TYPE TUBES: Introduction, Cross-field effects, Magnetrons – Different Types, 8-Cavity Cylindrical Travelling Wave Magnetron operations and o/p characteristics. PI mode and its significance. – Hull Cut-off Condition.

UNIT-V**MICROWAVE SOLID STATE DEVICES**

Introduction, Classification, Applications. TEDs – Introduction, Gunn Diode – Principle, RWH Theory, Characteristics, Basic Modes of Operation, Oscillation Modes. Avalanche Transit Time Devices – Introduction, IMPATT and TRAPATT Diodes – Principle of Operation and Characteristics.

UNIT-V1

MICROWAVE MEASUREMENTS

Description of Microwave Bench and measurement Precautions; Microwave Power Measurement – Bolometer Method. Measurement of Attenuation, Frequency, VSWR, Impedance Measurements .

TEXT BOOKS

1. Microwave Devices and Circuits – Samuel Y. Liao, PHI, 3rd Edition, 1994.
2. Microwave Principles – Herbert J. Reich, J.G. Skalnik, P.F. Ordung and H.L. Krauss, CBS Publishers and Distributors, New Delhi, 2004.

REFERENCES

1. Foundations for Microwave Engineering – R.E. Collin, IEEE Press, John Wiley, 2nd Edition, 2002.
2. Microwave Circuits and Passive Devices – M.L. Sisodia and G.S.Raghuvanshi, Wiley Eastern Ltd., New Age International Publishers Ltd., 1995.
3. Microwave Engineering, Raghuvanshi G.S. , 1st edition, Cengage Learning
4. Microwave Engineering Passive Circuits – Peter A. Rizzi, PHI, 1999.
5. Electronic and Radio Engineering – F.E. Terman, McGraw-Hill, 4th ed., 1955.
6. Elements of Microwave Engineering – R. Chatterjee, Affiliated East-West Press Pvt. Ltd., New Delhi, 1988.
7. Micro Wave and Radar Engineering – M. Kulkarni, Umesh Publications, 1998.

IV Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
3	1	-	3

COMPUTER NETWORKS (3EC05)

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

UNIT – I

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

PHYSICAL LAYER: Transmission media copper, twisted pair wireless, switching and encoding asynchronous communications;

UNIT - II

DATA LINK LAYER : Design issues in data link layer, Logical link control, framing, flow control, Protocol-stop and wait, Sliding Window, error detection and correction, CRC ,,HDLC, ATM.

UNIT - III

MEDIUM ACCESS SUB LAYER: ALOHA, MAC addresses, Carrier sense multiple access, ISDN, IEEE 802.X Standard Ethernet, wireless LANS. Bridges

UNIT - IV

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

UNIT – V

Congestion, Control Algorithms – General Principles – of Congestion prevention policies. Internetworking: The Network layer in the internet and in the ATM Networks.

UNIT –VI

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

APPLICATION LAYER – network threats, confidentiality , authenticity, DES and RSA algorithms, Domain name system, Electronic Mail, WWW, Multi Media.

TEXT BOOKS

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

REFERENCES

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

IV Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
4	1	-	4

OPTICAL COMMUNICATIONS (3C726)

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

After studying this course, the students will be able to

- i. Analyze the propagation of light in optical fiber.
- ii. Understand the principles of Scattering Losses, Dispersion and Polarization.
- iii. Understand the principles governing optical sources
- iv. Understand the principles governing optical detectors and optical receivers.
- v. Analyze optical systems for performance and utility
- vi. Critically review and summarize modern topics in optical communications and optical networks.

UNIT-I

Introduction, Ray Theory Transmission, Total Internal Reflection, Acceptance Angle, Numerical Aperture, Skew Rays. Electromagnetic Mode Theory of Optical Propagation - EM Waves - Modes in Planar Guide Cylindrical Fibers- Modes, V Number, Mode Coupling, Step Index Fibers, Graded Index Fibers. Single Mode Fibers- Cut off Wavelength, Mode Field Diameter, Effective Refractive Index

UNIT-II

Transmission Characteristics Of Optical Fiber -Attenuation - Material Losses absorption in silica glass fiber - Linear and Non Linear Scattering Losses - Fiber Bend unloading - Midband and farband infra red transmission - Intra and Inter-Modal Dispersion - All Over Fiber Dispersion - Polarization-non linear Phenomena. Optical fiber connectors, fiber alignment and Joint Losses - Fiber Splicer - Fiber Connectors - Expanded Beam Connectors - Fiber Couplers.

UNIT-III

Optical sources- LEDs, Structures, Materials, Quantum efficiency, Power, Modulation, Power bandwidth product. Injection Laser Diodes- Modes, Threshold conditions, External quantum efficiency, Laser diode rate equations, Resonant frequencies. Reliability of LED&ILD.

UNIT-IV

Optical Detectors- Optical detectors- Physical principles of PIN and APD, Detector response time, Temperature effect on Avalanche gain, Comparison of Photodetectors. Optical receiver operation- Fundamental receiver operation, Digital signal transmission, error sources, Receiver configuration, Digital receiver performance, Probability of error, Quantum limit, Analog receivers.

UNIT-V

Fiber Optic Receiver, Measurements - Fundamental Receiver Operation, Pre amplifiers, Error Sources - Receiver Configuration - Probability of Error - Quantum Limit. Fibre attenuation measurements, dispersion measurements - Fibre Refractive Index profile measurements - Fiber cut-off wave length Measurements - Fiber Numerical Aperture Measurements - Fiber diameter measurements

UNIT-VI

Optical Networks-Basic Networks-SONET/SDH-Broadcast-and –select WDM Networks-Wavelength Routed Networks –nonlinear effects on Network performance-Performance of WDM+EDFA system-solitons-Optical CDMA-Ultra High Capacity Networks.

Applications: Design of n optical link for voice transmission.

TEXT BOOKS:

1. Optical Fiber Communications – Gerd Keiser, Mc Graw-Hill International edition, 3rd Edition, 2000.
2. Optical Fiber Communications – John M. Senior, PHI, 2nd Edition, 2002.

REFERENCES:

1. Rajiv Rama Swamy, “Optical Networks “Second Edition Elsevier 2004
2. Fiber Optic Communications – D.K. Mynbaev , S.C. Gupta and Lowell L. Scheiner, Pearson Education, 2005.
3. Text Book on Optical Fibre Communication and its Applications – S.C.Gupta, PHI, 2005.
4. Fiber Optic Communication Systems – Govind P. Agarwal , John Wiley, 3rd Edition, 2004.
5. Fiber Optic Communications – Joseph C. Palais, 4th Edition, Pearson Education, 2004.

IV Year B. Tech. ECE - I Sem

L	T	P/D	C
3	1	-	3

EMBEDDED & REAL TIME SYSTEMS(3DC06)
(Common to ECM, ECE & EEE)
(PROFESSIONAL ELECTIVE- II)

a	b	c	d	e	f	g	h	i	j	k	L

UNIT – I

Introduction to Embedded Systems : Introduction, Complex Systems and Microprocessor, Embedded System Design Process, Formalisms for System Design (Ch 1 of Wolf) Design challenge, processor technology, IC technology, Design Technology, Trade-offs. (Ch 1 Frank)

UNIT – II

8051 Programming and Interfacing: 8051 Architecture, features, LCD Interfacing, Stepper Motor Interfacing, DC motor Interfacing Using PWM. (Ch 1, 10, 11 Mazidi)

UNIT – III

Introduction to Advanced Architecture: ARM Processor and Memory Organization, Programmer's Model, Instruction set, Instruction level Parallelism, Programming Input and output, Supervisor Mode, exceptions and Traps. (Ch2, 3 Wolf)

UNIT – IV

Interfacing with ARM : LCD Interfacing, Stepper Motor Interfacing, DC motor Interfacing Using PWM, I²C and SPI protocol.

Networked Embedded Systems: Bus Protocols, I²C bus, CAN bus, Ethernet Enabled Systems, Design Example- Elevator Controller. (Ch8 Wolf)

UNIT – V

Introduction to Real-Time Systems : Tasks and Task States, Tasks and Data, Semaphores, and Shared Data; Message Queues, Mailboxes and Pipes, Timer Functions, Events, Memory Management, Interrupt Routines in and RTOS Environment. (Ch6 & 7 Simon).

UNIT – VI

Basic Design Using a Real-Time Operating System : Principles, Semaphores and Queues, Hard Real-Time Scheduling Considerations, Saving Memory and Power, An example RTOS uC-OS / Vx-Works / RT Linux; Embedded Software Development Tools: Host and Target machines, Linker/Locators for Embedded Software, Getting Embedded Software into the Target System; Debugging Techniques: Testing on Host Machine (Ch 8, 9 & 10 Simon).

TEXT BOOKS :

1. Computers and Components: principles of embedded *computing* system design, Wayne Wolf, Elsevier.
2. Embedded System Design – A Unifies Hardware/Software introduction - Frank Vahid, Tony D. Givargis, John Wiley, 2002.
3. The 8051 Microcontroller And Embedded Systems Using Assembly And C – Mazidi, Pearson Education India, 2nd edition, 2008.
4. An Embedded Software Primer, David E. Simon, Pearson Education.
5. ARM reference manual.

REFERENCES :

1. Embedded Systems, Raj Kamal, TMH.
2. LPC2148 ARM7 Microcontroller Manual.
3. ARM Microcontroller Interfacing Hardware and Software, Warwick A Smith, Elkator
4. ARM Microcontroller Part1: 35 Projects for Beginners, Bert Van Dam, Elkator
5. 8051 Application Notes by Atmel.

IV Year, B.Tech, ECE –I- Sem.

L	T	P/D	C
3	1	-	3

CELLULAR AND MOBILE COMMUNICATIONS (3CC25)
(PROFESSIONAL ELECTIVE- II)

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

After going through the course, the student will be able to

1. Understand the limitations of conventional mobile telephone systems, basics of cellular mobile systems, and generations of cellular wireless systems.
2. Explore the design fundamentals of cellular radio system.
3. Understand the types of interferences present with the cellular systems and the design of cellular system to mitigate these effects
4. Analyze the characteristics of cellular signal for different terrain configurations.
5. Explore the frequency management and allocation of cellular systems and understand the types of handoffs used in cellular mobile radio systems.
6. Explore the architecture of GSM digital cellular network and understand the different multiple access techniques used in wireless systems.

UNIT I**INTRODUCTION TO CELLULAR MOBILE RADIO SYSTEMS:**

Limitations of conventional mobile telephone systems, Basic cellular wireless systems; First, second, third and fourth generation cellular wireless systems; Uniqueness of mobile radio environment – Long term fading, factors influencing short term fading , parameters of mobile multi path fading- time dispersion parameters, coherence bandwidth, Doppler spread and coherence time, Types of small scale fading.

UNIT-II**FUNDAMENTALS OF CELLULAR RADIO SYSTEM DESIGN:**

Concept of Frequency reuse, Co-channel Interference, Co-channel Interference Reduction Factor, desired C/I from a normal case in a omni directional Antenna system, System capacity, Trunking and grade of service; Improving coverage and capacity in cellular system – cell splitting, sectoring, micro cell zone concept.

UNIT-III**CHANNEL INTERFERENCE:**

Measurement of real time Co-Channel Interference, Design of antenna system, Antenna parameters and their effects; Diversity techniques- Space diversity, polarization diversity, Frequency diversity and Time Diversity. Non-co-channel interference-Adjacent channel Interference, near end and far end interference, cross talk, effect on coverage and Interference by power decrease, antenna height decrease, effect of cell site components, UHF TVinterference

Applications: Design of a cellular systems using frequency reuse factor ($k=19$) for directional and omni-directional antenna systems

UNIT-IV**CELL COVERAGE FOR SIGNAL AND TRAFFIC :**

Signal reflections in flat and hilly terrain, effect of human made structures, phase difference between direct and reflected paths, constant standard deviation, straight line path loss slope, general formula for mobile propagation over water and flat open area, near and long distance propagation, path loss from a point to point prediction model in different conditions,merits-of-LEE-model.

UNIT-V**FREQUENCY MANAGEMENT AND CHANNEL ASSIGNMENT:**

Numbering and grouping, setup access and paging channels channel assignments to cell sites and mobile units, channel sharing and borrowing, sectorization, overlaid cells, non fixed channel assignment.

HANDOFF, DROPPED CALLS:

Handoff initiation, types of Handoff, delayed handoff, Advantages of handoffs, Power difference handoff, forced handoff, mobile assigned handoff and soft handoff, Intersystem handoff. Introduction to dropped call rates and their evaluation.

UNIT-VI

DIGITAL CELLULAR NETWORKS: GSM architecture, GSM channels, multiplex access scheme , TDMA, CDMA,WCDMA.

TEXTBOOKS:

1. Mobile Cellular Telecommunications – W.C.Y. Lee, Tata McGraw Hill, 2nd Edn., 2006.

IV Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
3	1	-	3

INDUSTRIAL AUTOMATION (3CC70)
(PROFESSIONAL ELECTIVE-II)

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

UNIT-1

Smart Sensors: Temperature IC and smart sensors, pressure IC and smart sensors and acceleration, rotation speed sensors, Intelligent opto-sensors, Humidity frequency output sensor, chemical and gas smart sensors, Data Acquisition methods for multi-channel sensor system, Data acquisitions method with time division channeling, space during channeling smart sensors architectures and Data Acquisition.

UNIT- 2

PID Controllers: Over view of control systems, Introduction to control, PID controllers, feed back stabilization of linear systems, Optimal control, Some current techniques for PID controller design, The Ziegler-Nichols step response method, The Ziegler- Nichols frequency respond method, Dominant pole design.

Tunning Approaches: Time Domain optimization, frequency domain shaping, optimal control methods

UNIT-3

Programmable logic controller (PLC): Introduction of PLC, technical definition of PLC, type of PLC-unitary PC, modular PLC (Small PLC, Medium PLC and Large PLC), block diagram, processor software / Executive software, multitasking, Languages, Ladder Language, PLC timers and counters, PLC input output modules.

UNIT-4

Distributed Control Systems (CDS) - SCADA Systems: What is SCADA, Definition of SCADA, Applicable Processes, Elements of a SCADA system, A Two-way System, A brief history of SCADA, Development from Telemetry, Dependence on communications and computers, Real-Time Systems, What Really is Real Time, Communications Access and “Master-Slave”, Determining Scan Interval, Remote Control, Murphy’s Law and Remote Control, Safety Instrumented Systems, Regulatory Requirements.

UNIT-5

Remote Terminal Units (RTUs): RTU function, Communications Interface, Protocol Detailed, Discrete Control, Analog Control, Pulse Control, Serial Control, Monitor Discrete Signals, Monitor Analog Signals, Monitor Serial Signals, Non-RTU Functions, Master Terminal Units (MTUs), Communications Interface, Configuring a Picture of Process, Some Simple Applications, Data Storage, Operator Interface, Security Considerations, Alarming, Control Change Screens, Status Screens, Graphics and Trending, Reports, Parallel Operator Interface

UNIT- 6

Industrial Communication and Networks: Introduction, type of communication interface, type of Networking channels, parallel communication interface IEEE 488, devices usable with IEEE 488 hand shaking process interface management lines, serial communication interface, balanced and un balanced mode, communication modes, synchronization and timing. Network components, industrial Network Bus Network, Devices Bus Network vs Process Bus Network controller Area Network (CAN)

Radio: Turn-on Time, Frequencies, Path Studies and Seasonal Variations, Solar Variations, Reliability and Maintenance, Satellite Communications

Text Books:

1. Nikolay V. Kirian Kari, Sergey Y. Yurish, Shpak, Vadimp Daynega, "*Data Acquisition and Signal Processing for smart sensors*", John Wiley & Sons, 2002.
2. Stuart A. Boyer, "*Supervisory Control and Data Acquisition*", International Society of Automation, 2010.

Reference:

1. Guillermo J. Silva, Anirudha Datta, Ming- Tzu Ho and Shankar P. Bhattacharya, "PID Controllers for Time-Delay Systems" Birkhäuser Boston, 2005.

IV Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
3	1	-	3

DIGITAL DESIGN THROUGH VERILOG HDL (3C724)
(PROFESSIONAL ELECTIVE- II)

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

After completing this course, the students will have demonstrated

- i. An ability to understand levels of design description, concurrency, simulation and synthesis.
- ii. An ability to apply language constructs, data types, operators available in Verilog HDL.
- iii. An ability to design combinational logic and sequential logic in gate level modeling.
- iv. An ability to design with Gate and Switch level modeling
- v. An ability to use system tasks, functions and UDPs
- vi. An ability to design SM charts and realize digital design using SM charts.

UNIT I**INTRODUCTION TO VERILOG HDL**

Verilog as HDL, Levels of Design Description, Concurrency, System Tasks, Simulation and Synthesis, Functional Verification.

LANGUAGE CONSTRUCTS AND CONVENTIONS

Introduction, Keywords, Identifiers, White Space, Characters, Comments, Numbers, Strings, Logic Values, Strengths, Data Types, Scalars and Vectors, Parameters, Operators. Verilog Module structure, Testbench module- Net types, Strengths and Contention Resolution, Delays.

UNIT-II**MODELING AT DATA FLOW LEVEL**

Introduction, Continuous Assignment Structures, Delays and Continuous Assignments, Assignment to Vectors, Operators.

BEHAVIORAL MODELING

Introduction, Initial Construct, Always Construct, Assignments with delays, Blocking and Non blocking Assignments - Examples, Wait construct, Multiple Always Blocks, Design at Behavioral Level constructs- Case statements, if and if-else, repeat, for loop, while loop, forever loop. Other constructs- assign-deassign, disable, force-release.

UNIT-III**GATE LEVEL MODELING**

Introduction, Gate Primitives- Illustrative Examples, Tri-State Gates, Design of Basic Circuits using Instantiation of Gate Primitives- Half, Full and Parallel Adders, Decoders, Multiplexers. Design of Flip-flops with Gate Primitives.

SWITCH LEVEL MODELING

Introduction, Basic Transistor Switches, CMOS Switch, Bi-directional Gates, Time Delays with Switch Primitives, Instantiations with Strengths and Delays, Strength Contention with Trireg Nets-Examples.

UNIT-IV**SYSTEM TASKS, FUNCTIONS, AND COMPILER DIRECTIVES**

Introduction, Parameters, Path Delays, Module Parameters, System Tasks and Functions, File-Based Tasks and Functions, Compiler Directives, Hierarchical Access, User- Defined Primitives (UDP).

UNIT-V**COMPONENT TEST AND VERIFICATION**

Test bench – combinational circuit testing, sequential circuit testing, test bench techniques, design verification, assertion verification.

UNIT-VI

DIGITAL SYSTEM DESIGN AND VERIFICATION

FSM Design (Moore and Mealy Machines) – Vending Machine design and verification , Derivation and Realization of Algorithmic State Machine Chart Design and Verification examples - Binary Multiplier, Dice game. Other design examples - RAM (Single & Dual Port), UART Design.

Text Books

1. Design through Verilog HDL – T.R. Padmanabhan and B. Bala Tripura Sundari, WSE, 2004 IEEE Press.
2. Digital Systems Design using VHDL – Charles H Roth, Jr. Thomson Publications, 2004.
3. Verilog HDL – Samir Palnitkar, 2nd Edition, Pearson Education, 2009

References

1. Advanced Digital Logic Design using Verilog, State machines and Synthesis for FPGAs, - Sunggu Lee, Cengage Learning
2. Fundamentals of Logic Design with Verilog – Stephen. Brown and Zvonko Vranesic, TMH, 2005.
2. A Verilog Primer – J. Bhaskar, BSP, 2003.
3. Advanced Digital Design with Verilog HDL – Michael D. Ciletti, PHI, 2005.
4. Digital Logic Design using Verilog, State machine and synthesis for FPGA, Sunggu Lee, Cengage Learning, 2009.

IV Year B.Tech.ECE - I Sem

L	T	P/D	C
-	-	2	1

PROJECT PHASE-I (3C793)

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

Pre-Requisites: All Courses till this semester

After completing this course:

- Students will have identified a topic from the current technical topics of their choice in the area of ECE and the allied fields, after surveying in the internet resources, journals and technical magazines in the library.
- Student will learn to arrange the contents of the presentation and scope of the topic, in an effective manner.
- Student will presents the technical topic they chose in front of the panel and the fellow students, using the oratory skills.
- Students will also face the questions posed by the panel.

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 Project Phase – I.

IV Year B.Tech.ECE - I Sem

L	T	P/D	C
-	-	-	2

INDUSTRY ORIENTED MINI PROJECT (3C794)

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

Pre-Requisites: All Courses till this semester

Course Outcomes:

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

There shall be an industry-oriented mini-Project in their specialization that may be carried out in collaboration with an industry / R & B organization / Academic Institution, to be taken up during the vacation after III year II Semester examination. However, the mini project and its report shall be evaluated during IV year I Semester. The industry oriented mini project shall be evaluated for a total of 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 **internal evaluation** shall consist of:

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

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

IV Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
-	-	4	2

COMPUTER NETWORKS LAB (3EC91)

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

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

IV Year, B. Tech, ECE – I - Sem.

L	T	P/D	C
-	-	4	2

MICROWAVE AND OPTICAL COMMUNICATION LAB (3C782)

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

Part – A (Any 7 Experiments)

1. Reflex Klystron Characteristics.
2. Gunn Diode Characteristics.
3. Attenuation Measurement.
4. Directional Coupler Characteristics.
5. VSWR Measurement.
6. Impedance and Frequency Measurement.
7. Waveguide parameters measurement.
8. Scattering parameters of Circulator.
9. Scattering parameters of Magic Tee.

Part-B (Any 5 Experiments)

1. Characterization of LED.
2. Characterization of Laser Diode.
3. Intensity modulation of Laser output through an optical fiber.
4. Measurement of Data rate for Digital Optical link.
5. Measurement of NA
6. Measurement of losses for Analog Optical link.

IV Year, B. Tech, ECE – I - Sem.**VLSI Technology and Design Lab (Verilog and VHDL) (3EC783)**

L	T	P/D	C
-	-	4	2

a	b	c	d	e	f	g	h	i	j	k	L
X	X	X	X	X	X			X	X		X

After completing this course, the students will be able

- i. To explore various VLSI CAD Tools like NGSPICE, Xilinx, and Cadence.
- ii. To analyze MOS transistor and circuit characteristics and performance using NGSPICE.
- iii. To design and simulate combinational circuits in different technologies using Cadence Virtuoso.
- iv. To apply layout design rules for physical designs in Cadence Virtuoso.
- v. To understand and implement digital logic gates and circuits using Verilog HDL.
- vi. To simulate, synthesize and implement various combinational and sequential designs on FPGA boards (SPARTAN 3) using Xilinx tools.
- vii. To offer FPGA based solutions to societal problems.

Tools to be used: Xilinx, Cadence, SPICE

Part-A

1. Perform I-V characteristic analysis of transistors using SPICE.
2. Perform inverter voltage transfer characteristics and logic gate delay analysis using SPICE.
3. Design combinational circuit design using subckts in SPICE (NAND/NOR based)

Part-B

1. Introduction to Cadence Virtuoso for design and Analysis of CMOS Ckts. using 90nm MOSFETs Technology
2. Inverter Characteristics and layout using Cadence
3. Logic gate design and layout using Cadence

Part-C

1. Implement combinational digital blocks (Adders - Half, Full, Binary & its applications) using FPGA.
2. Implement Sequential digital blocks (Counter, Shifters and Sequence Detectors) using FPGA
3. Implement Complex memory modules - RAM, FIFO, LIFO

Part-D Lab Project –

1. Hierarchical design and layout of MSI circuits (multiplexer, decoders , etc.)
2. FPGA based traffic light controller using Verilog HDL
3. FPGA based Beverage Vending Machine
4. FPGA based UART serial communication interface
5. Implement 8-bit 3-stage pipeline processor
6. Using SPICE Implement 6T SRAM memory with read and write logic

IV Year B.Tech.ECE - I Sem

L	T	P/D	C
-	-	2	1

TECHNICAL PAPER WRITING AND SEMINAR – III (3C785)

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

Pre-Requisites: All Courses till this semester

Course Outcomes:

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

There shall be a Technical Paper writing and seminar evaluated for 25 marks in every semester from III-year I-semester. The evaluation is purely internal and will be conducted as follows:

Paper writing : 05 marks

Final report : 05 marks

Presentation before a departmental committee

consisting of Head, a Senior Faculty and Supervisor : 15 marks

L	T	P/D	C
3	1	-	3

IV Year, B. Tech, ECE – II - Sem.

RADAR SYSTEMS (3C831)

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

After studying this course, the students will be able to

1. Understand the basics of Radar systems and its applications and its frequencies
2. Understand the Radar parameters, how it affects the Range measurement.
3. Understand the Doppler Effect, draw backs of CW radars.
4. Understand the basic concepts of Moving target indicators. What are the draw backs of MTI Radars.
5. Understand the concept of scanning and tracking.
6. Understand various types of displays and different phased arrays.

UNIT I

BASICS OF RADAR

Nature of Radar, Maximum Range, Radar Equation. Block Diagram. Radar Frequencies and Applications. Prediction of Range Performance. MDS. Rx Noise. Modified Range Equation. Related Problems.

UNIT-II

SNR

SNR. Envelope Detectors. Integration of Radar Pulses. RCS of Targets (simple targets-sphere, cone-sphere. PRF and Range Ambiguities. System losses.

UNIT-III

CW AND FMCW RADAR

Doppler Effect. CW Radar, Block diagram, Applications of CW Radar. Rx bandwidth requirements. FM CW Radar, Block diagram and characteristics. FM- CW Altimeter.

UNIT-IV

MTI RADAR

Block diagram of MTI Radar with Power Amplifier and Power Oscillators. Non Coherent MTI Radar. Delay line Cancellers. Double Cancellation. Blind Speeds. Filter Characteristics, Limitations to MTI performance. MTI vs Pulse Doppler Radar. Staggered PRF, Range gated Doppler Filters.

UNIT-V

TRACKING RADARS

Tracking Radars: Sequential lobing. Conical Scan. Mono Pulse tracking Radars. Phase Comparison Mono Pulse.

Matched filter Receiver: MFR Response Characteristics & derivation. Correlation Functions & Cross Correlation Receiver, Efficiency of Matched Filter, Matched Filter with Non White Noise.

UNIT-VI

RADAR RECEIVERS

Noise Figure & Noise Temperature, Radar Displays, Types of Duplexers.

Phased arrays: basic concepts, Beam steering and beam width changes. Series Vs parallel feeds. Applications, Advantages & limitations. ECCM.

Text Books

1. Merrill I. Skolnik, *Introduction to Radar Systems*, McGraw-Hill, 2nd Edition ,1981.

References

1. Merrill I.Skolnik,*Introduction to Radar systems,McGraw-Hill,3rd Edition ,2001.*
2. Byron Edde, *Radar Principles,Technology,Applications.* Pearson Edition,2004.

IV Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
2	1	-	2

CULTURE, VALUES, PROFESSIONAL ETHICS & IPR (3GC33)**(Common to all branches)**

a	b	c	d	e	f	g	h	i	j	k	L
					X		X				

UNIT-1 INDIAN CULTURE:

A Introduction to Culture Values and Ethics, Bharata, The Indian Concept of Human Life, Indian Civilization, Sanskrit and Indian Languages, Festivals, Sculpture, Music, Dance, Drama, Ayurveda, Family and its Importance, Indian Marriage System, Status of Women in Indian Society, Education, Purpose, Ancient System, Value Education, Interfaith Understanding, Happiness, Modernism and its Effect on Lifestyle, Mind and its Operation, Control of Mind, Yoga, Exemplary Life Sketches-Albert Einstein, Abraham Lincoln

UNIT-II VALUE SYSTEM:

Human Value System, Truthfulness, Righteousness, Peace, Non-Violence, Love, Kindness and Compassion, Humility, Faith, Courage, Optimism, Forgiveness, Ceiling on Desires (Control of Sense organs), Exemplary Life Sketches-M K Gandhi, Abdul Kalam

UNIT-III ETHICS:

Ethics in Ancient India, Ethics, Morals, Ethics and Human Life, Core Areas for Ethics, Values, Morality, Integrity, Honesty, Character, Loyalty, Trustworthiness, Courage and Confidence, Confidentiality, Secrecy and Transparence, Justification, Contracts and Spirit Promises and Schedules, Quarrels, Selfishness, Obstacles, Supporting Measures, Reputation and its sale, Decision Making in Ethics, Exemplary Life Sketches-Vishveshwaraiyah, Jagadeesh Chandra Bose, Meghanad Saha

UNIT- IV PROFESSIONAL ETHICS:

Occupation, Profession, Professional, Professional Organization, Obligations Of a Professional, Temptations, Aptitude, Importance of Professional Ethics for Engineers, Code of Ethics, Need for a Code, Impact of Ethical Behaviour, The Code of Ethics for Engineers, Fundamental Principles and Cannons, Commerce and Ethics, Marketing Ethics, Finance and Ethics, Science, Religion and Ethics, Medical Ethics, Genetics and Ethics, Politics and Ethics, Genders and Ethics, Media and Ethics, Computer Ethics, Exemplary Life Sketches- Narayan Murthy, Homi Jahangir Bhabha

UNIT –V INTELLECTUAL PROPERTY RIGHTS (IPR):

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

UNIT-VI

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

REFERENCES:

1. The ABCs of Ethics by Michael. L. Buckner, Universe. Inc, New York Lincoln, Shanghai
2. Science, Faith and Ethics by Denis Alexander and Robert.S.White, Hendrickson Publishers, Massachusetts, USA, March 2006
3. Vedic Science Primer by PSR Murthy, BS Publications, Hyderabad
4. Medical Ethics-Global View Points, Edited by Diane Andrews, Hennig Feld, Green Haven Press
5. Divine Stories, Human Value Stories, Volume I and II, Sri Satya Sai Books and Publications

IV-Year B. Tech ECE II-Semester

L	T	P/D	C
3	1	-	3

WIRELESS COMMUNICATION AND NETWORKS (3C827)
(PROFESSIONAL ELECTIVE-III)

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

UNIT-I: Introduction to Wireless Communication systems: Evolution of mobile radio communications, Examples of wireless communication systems, Paging systems, cordless telephone systems, comparison of various wireless systems.

Modern wireless communication systems: second generation cellular networks, Third generation wireless networks, wireless in local loop, Wireless LAN, Bluetooth and PAN.

UNIT- II: Multiple Access Techniques for Wireless communication: Introduction to multiple access, FDMA, TDMA, Spread spectrum multiple access, Space division multiple access, Packet Radio, Capacity of a cellular systems.

UNIT-III: Wireless Networking: Difference between wireless and fixed telephone networks, Development of wireless networks, Fixed network transmission hierarchy, Traffic routing in wireless networks, Wireless data services, Common channel signaling.

UNIT- IV: Mobile IP And Wireless Access Protocol: Mobile IP Operation of mobile IP, Co-located address, Registration, Tunneling, WAP Architecture, overview, WML scripts, WAP service, WAP session protocol, wireless transaction, Wireless datagram protocol

UNIT- V: Wireless LAN: Historical overview of the LAN industry, Evolution of the WLAN industry, Wireless home networking, IEEE 802.11, The PHY layer, MAC Layer, Wireless ATM, HYPERLAN, HYPERLAN-2, Introduction to OFDM, Blue tooth protocol Architecture.

UNIT- VI: Wireless WAN: Mechanism to support a mobile environment, Communication in the infrastructure. IS-95 CDMA forward channel, IS-95 CDMA reverse channel, Packet and frame formats in IS-95, IMT – 2000, Forward channels in W-CDMA and CDMA-2000, Reverse channels in W-CDMA and CDMA-2000, GPRS and higher data rates, Short messaging service in GPRS mobile application protocols.

Text Books:

1. Theodore S. Rappaport, “Wireless Communications and applications”, Pearson Education -2003.
2. Kaveh Pahlavan, Prashant Krishna Murthy, “Principles of Wireless networks”, Pearson Education, 2002.

Reference Books:

1. P.Nicopolitidis, M.S.Obaidat, G.I.Papadimitria, A.S. Pomportsis, “Wireless Networks”, John wily & sons, 2003.
2. Dr. Sunil kumar, S.manvi, M.S.Kakkasageri, ”Wireless and Mobile Networks, Concepts and Protocols”, Wiley India, 2010.
3. Jon W.Mark and W.Zhqung , “ Wireless Communication and Networking “, PHI, 2005.

IV Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	1	-	3

DESIGN OF FAULT TOLERANT SYSTEMS (3C828)
(PROFESSIONAL ELECTIVE-III)

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

After completing this course, the students will have demonstrated

- i. An ability to understand the basics concepts of reliability and the use of redundancy to improve reliability
- ii. An ability to design self checking and fault tolerant design.
- iii. An ability to generate test vectors using ATPG analysis.
- iv. An ability to design of testable designs.
- v. An ability to understand scan architecture and testing of sequential circuits.
- vi. An ability to understand BIST concepts and generalized BIST architecture.

UNIT I

BASIC CONCEPTS: Reliability concepts, Failure & Faults, Reliability and failure rate, Relation between reliability and Mean time between failure, Maintainability and Availability, Reliability of series, Parallel and Parallel-Series combinational circuits.

FAULT TOLERANT DESIGN: Basic concepts – Static, dynamic, hybrid, Triple Modular Redundant System, Self purging redundancy, Siftout redundancy (SMR), 5 MR re-configuration techniques, Use of error correcting code, Time redundancy and software redundancy.

UNIT II

SELF CHECKING CIRCUITS: Basic concepts of Self checking circuits, Design of Totally Self Checking checker, Checkers using m out of n codes, Berger code, Low cost residue code.

FAIL SAFE DESIGN: Strongly fault secure circuits, fail safe design of sequential circuits using partition theory and Berger code, Totally self checking PLA design.

UNIT III

Introduction to ATPG, ATPG process – Testability and Fault Analysis methods, Fault masking, Transition delay fault ATPG, Path delay, fault ATPG.

UNIT IV

DESIGN FOR TESTABILITY FOR COMBINATIONAL CIRCUITS: Basic concepts of testability, controllability and observability, the Reed Muller's expansion technique, OR-AND-OR design, use of control and syndrome testable designs.

UNIT V

Scan Architectures and Techniques: Introduction to scan based testing, functional testing, the scan effective circuit, the MUX-D style scan flip-flops, the scan shift register, scan cell operation.

UNIT VI

BUILT IN SELF TEST (BIST): BIST concepts, Test pattern generation for BIST exhaustive testing, Pseudorandom testing, pseudo exhaustive testing, constant weight patterns, Generic offline BIST architecture, memory test architecture.

Applications: Design Of BIST Architecture For Memory Testing Using March Algorithms.

TEXT BOOKS:

1. Fault Tolerant & Fault Testable Hardware Design - Parag K. Lala, PHI
2. Design for Test for Digital ICs and Embedded Core Systems – Alfred L. Crouch, 2008, Pearson Education.
3. Fundamentals of Logic Design – Charles H. Roth, 5th ed., Cengage Learning.

REFERENCES:

1. Digital Systems Testing and Testable Design - M. Abramovili, M.A. Breues, A. D. Friedman, Jaico publications.
2. Essentials of Electronic Testing – Bushnell, and Vishwani D. Agarwal, Springers.

IV Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	1	-	3

**IMAGE & SPEECH PROCESSING (3C829)
(PROFESSIONAL ELECTIVE-III)**

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

A student who successfully fulfills the course requirements will have demonstrated:

1. Familiarity with image sampling, image types and geometry and image transforms and properties
2. An understanding of image enhancement in spatial and frequency domain, point and mask operations in spatial domain, histogram and histogram equalization
3. familiarity with mathematical operations like dialation, erosion, opening and closing, hit miss transform and linear and non linear image restoration techniques
4. knowledge of basic idea of region based , boundary based and edge based image segmentation
5. Ability to understand lossless and lossy compression techniques in spatial and frequency domain and compression metrics
6. Knowledge of speech analysis in time and frequency domain, and different features of speech

UNIT I**DIGITAL IMAGE FUNDAMENTALS**

Concepts of gray levels. Gray level to binary image conversion. Sampling and quantization. Relation ship between pixels. Imaging Geometry. Image Transforms 2-D FFT , Properties. Walsh transform, Hadamard Transform, Discrete cosine Transform, Haar transform

UNIT II**IMAGE ENHANCEMENT POINT PROCESSING**

Histogram equalization and specification techniques. Spatial filtering. Enhancement in frequency domain, Image smoothing, Image sharpening.

UNIT III**IMAGE MORPHOLOGY**

Need for Morphological processing, Morphological operator: Dilation and Erosion. Opening and closing operations. Hit or miss transform.

IMAGE RESTORATION

Degradation model, Algebraic approach to restoration, Inverse filtering, least mean square filters, Constrained Least Squares Restoration, Interactive Restoration.

UNIT IV**IMAGE SEGMENTATION**

Detection of discontinuities. Edge linking and boundary detection, Thresholding, Region oriented segmentation.

UNIT V**IMAGE COMPRESSION**

Redundancies and their removal methods, Fidelity criteria, Image compression models, Huffman, Run length coding and Arithmetic coding. Source encoder and decoder, Error free compression, Lossy compression.

Applications: Design of JPEG-2000 image compression system.

UNIT VI**SPEECH PRODUCTION:**

Speech perception: Human hearing, auditory psychophysics, pitch perception, masking. Speech Analysis: Time domain and frequency domain analysis of speech, Parameter estimation

TEXT BOOK :

1. Digital Image processing – R.C. Gonzalez & R.E. Woods, Addison Wesley/ Pearson education, 2nd Edition, 2002.
2. Digital Processing of speech signals - L.R. Rabiner and R.W. Schafer , Prentice Hall, 1979.

REFERENCES :

1. Fundamentals of Digital Image processing – A.K.Jain , PHI.
2. Digital Image processing using MATLAB – Rafael C. Gonzalez, Richard E Woods and Steven L. Edition, PEA, 2004.
4. Fundamentals of Electronic Image Processing – Weeks Jr., SPIC/IEEE Series, PHI.
3. Digital Image Processing – William K. Pratt, John Wiley, 3rd Edition, 2004.

IV Year, B. Tech, ECE – II - Sem.

L	T	P/D	C
3	1	-	3

**OPERATING SYSTEMS (3EC07)
(PROFESSIONAL ELECTIVE-III)**

a	b	c	d	e	f	g	h	i	j	k	L
X											

UNIT I

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

UNIT II

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

UNIT III

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

UNIT IV

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

UNIT V

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

UNIT VI

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

TEXT BOOKS

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

REFERENCES

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

IV Year B.Tech.ECE - II Sem

L	T	P/D	C
-	-	15	10

PROJECT PHASE-II (3C895)

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

Pre-Requisites: All Courses till this semester

Course Outcomes:

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

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

External Evaluation of the project (viva-voce) shall be conducted by a committee appointed by the Chief Superintendent. The committee consists of an external examiner, HOD, a Senior Faculty Member and Internal Guide.

The pattern of Internal Evaluation is as follows:**Division of marks for internal assessment – 50 marks**

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

If the project is conducted internally, the marks will be given by Internal Guide himself.

Division of Marks for External Evaluation – 150 Marks

Pattern of External Evaluation for Project

- | | |
|---------------------------------------|------------|
| 1. Final Project Report | : 30 Marks |
| 2. Presentation | : 20 Marks |
| 3. Demonstration / Defense of Project | :100 Marks |

IV Year B. Tech. ECE - II Sem

L	T	P/D	C
-	-	-	2

COMPREHENSIVE VIVA-VOCE-III (3C896)

a	b	c	d	e	f	g	h	i	j	k	L
X	X							X			

Pre-Requisites: Knowledge on all Courses till this semester

Course Outcomes:

- Students are assessed on the courses they have undergone till the completion of that academic year.
- They improve skill are asked to comprehend the concepts in the core subjects and the elective subjects, to make them ready to face technical interviews which improve their employability skills.

There shall be a Comprehensive Viva-Voce in every II Semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of an External Examiner, Head of the Department and two Senior Faculty members of the Department.

The Comprehensive Viva-Voce is aimed to assess the students' understanding in various subjects he/she studied during the B.Tech course of study till II-semester. 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, ECE – II - Sem.

L	T	P/D	C
-	-	2	1

TECHNICAL PAPER WRITING AND SEMINAR-IV (3C886)

a	b	c	d	e	f	g	h	i	j	k	L
X	X				X		X	X	X		x

Pre-Requisites: All Courses till this semester

Course Outcomes:

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

There shall be a Technical Paper writing and seminar evaluated for 25 marks in every semester from III-year I-semester. The evaluation is purely internal and will be conducted as follows:

Paper writing : 05 marks

Final report : 05 marks

Presentation before a departmental committee
consisting of Head, a Senior Faculty and Supervisor : 15 marks