

**COURSE STRUCTURE
AND
DETAILED SYLLABUS**

for

B.Tech – I - IV Year

in

**ELECTRONICS AND COMMUNICATION ENGINEERING
(ECE)**

(Applicable from the Academic Year 2010-2011)



SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY

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

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

SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)**B.Tech in Electronics and Communications Engineering****COURSE STRUCTURE****I Year – I Semester**

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

I Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101EN02	English – II	2	---	---	2	30	70
2	101MA03	Engineering Mathematics – II	3	1	---	3	30	70
3	101PH02	Engineering Physics – II	3	1	---	3	30	70
4	101CS01	Data Structures and C ++	3	1	---	3	30	70
5	101ME02	Engineering Drawing – II	1	---	2	2	30	70
6	101EC05	Electronic Devices and Circuits	4	1	---	4	30	70
7	101EE43	Network Analysis	3	1	---	3	30	70
8	101EN72	English Language Lab - II	---	---	2	1	25	50
9	101CS71	Data Structures and C ++ Lab	---	---	3	2	25	50
10	101ME72	Engineering Workshop – II /	---	---	3/2	1	25	50
11	101PH72	Engineering Physics Lab- II	---	---	3/2	1	25	50
Total			19	5	10	25	310	690

II Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101MA05	Mathematical Tools	3	1	---	3	30	70
2	101EC06	Switching Theory and Logic Design	3	1	---	3	30	70
3	101ME04	Basic Mechanical Engineering	3	1	0	3	30	70
4	101EE42	Principles of Electrical Engineering	3	1	0	3	30	70
5	101EC07	Electronic Circuit Analysis	4	1	0	4	30	70
6	101EC08	Signals and Systems	3	1	0	3	30	70
7	101EN73	Functional and Communicative Written English	---	---	2	2	25	50
8	101EC71	Electronic Devices & Circuits Lab	---	---	3	2	25	50
9	101EC72	Basic Simulation Lab	---	---	3	2	25	50
Total			19	6	8	25	255	570

II Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101CH03	Environmental Studies	3	1	---	3	30	70
2	101MB01	Managerial Economics and Financial Analysis	3	1	---	3	30	70
3	101EC09	Pulse and Digital Circuits	3	1	---	3	30	70
3	101EC10	Probability Theory and stochastic Process	3	1	---	3	30	70
4	101EC11	Analog Communications	3	1	---	3	30	70
6	101EC12	Electromagnetic Theory and Transmission Lines	3	1	---	3	30	70
7	101EN74	Effective English Communication and Soft Skills	---	---	2	2	25	50
8	101EC90	Comprehensive Viva Voce - I	---	---	---	1	---	50
9	101EC79	Pulse and Digital Circuits Lab	---	---	3	2	25	50
10	101EC77	Electronic Circuit Analysis Lab	0	0	3	2	25	50
Total			18	6	8	25	255	620

III Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1		Open Elective – I	2	1	---	2	30	70
2	101EC13	Linear and Digital IC Applications	3	1	---	3	30	70
3	101BT37	Human Values, Ethics and IPR	2	--	--	2	30	70
4	101EC14	Antennas and Wave Propagation	4	1	--	4	30	70
5	101EC15	Digital Signal Processing	4	1	--	4	30	70
7	101MA71	Logical Reasoning – I	---	--	2	2	25	50
8	101EC91	Group Project	--	--	3	1	25	25
9	101EC73	Linear and Digital IC Applications Lab	--	--	3	2	25	50
10	101EC75	Digital Signal Processing Lab	--	--	3	2	25	50
11	101EC74	Analog Communications Lab	--	--	3	2	25	50
Total			15	4	14	24	275	575

III Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101EM05	Microprocessor & Microcontrollers	3	1	--	3	30	70
2		Open Elective – II	3	--	--	3	30	70
3		Professional Elective-I	3	1	--	3	30	70
4	101EC17	Digital Communications	4	1	--	4	30	70
5	101EM07	VLSI Design	4	1	--	4	30	70
6	101MA72	Quantitative Aptitude	---	--	2	2	25	50
7	101EC92	Comprehensive Viva Voce - II	--	--	--	1	--	50
8	101EM71	Microprocessors and Microcontrollers Lab	--	--	3	2	25	50
9	101EC80	Digital Communication Lab	--	--	3	2	25	50
10	101EM73	VLSI lab	--	--	3	2	25	50
Total			19	4	8	26	250	600

IV Year – I Semester

S.No.	Subject Code	SUBJECT	L	T	P/D	C	Max. Marks	
							Int	Ext
1	101MB02	Management Science	3	1	--	3	30	70
2	101EC19	Linear Control Systems	3	1	--	3	30	70
3	101EC20	Micro Wave Engineering	3	1	--	3	30	70
4	101EC21	Computer Networks	3	1	--	3	30	70
5	101EC22	Telecommunication Switching Systems and Networks	3	1	--	3	30	70
6		Professional Elective – II	3	1	--	3	30	70
7	101MA73	Logical Reasoning – II	--	--	2	2	25	25
8	101EC93	Pre Project Seminar	--	--	--	2	50	--
9	101EC94	Industry oriented Mini Project Evaluation	--	--	--	2	25	50
10	101EC83	Computer Networks Lab	--	--	3	2	25	50
11	101EC82	Micro Wave and Optical Communications Lab	--	--	3	2		
Total			18	6	8	28	305	545

IV Year – II Semester

S.No.	Subject Code	SUBJECT	L	T	P/D	C	Max. Marks	
							Int	Ext
1	101EC25	Cellular and mobile computing	4	--	--	4	30	70
2		Professional Elective – III	4	--	--	4	30	70
3	101EC95	Project	--	--	--	10	50	150
4	101EC96	Comprehensive Viva Voce - III	--	--	--	2	--	50
5	101EC97	Technical Seminar	--	--	--	2	25	--
Total			8	--	--	22	135	340

ELECTIVE SUBJECTS

Open Electives			Professional Electives		
Open Elective-I			Professional Elective-I		
1	101FL01	Spanish	1	101CS07	Operating Systems
2	101FL02	French	2	101EM03	Computer Organization
3	101FL03	German	3	101IT03	Data Base Management Systems
			4	101CS03	Object Oriented Programming
Open Elective-II			Professional Elective-II		
1	101MB03	Banking, Insurance and Risk Management	1	101EC23	Satellite Communications
2	101IT10	Neural Networks and Fuzzy Logic	2	101EC24	Digital Design Through Verilog HDL
			3	101EC26	Optical Communications
			4	101EC70	Industrial Automation
			Professional Elective-III		
			1	101EC27	Wireless Communication and Networks
			2	101EC28	Multimedia Networks
			3	101EC29	Image and Speech Processing
			4	1058012d	Embedded and Real Time systems
			5	101EC31	Radar Systems

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L	T	P/D	C
3	0	0	3

(101EN01) ENGLISH – I (A Communicative Approach)

(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. Writing | : | Work-related correspondence |
| 3. Listening | : | Listening for words |
| 4. Speaking | : | Making requests |
| 5. Grammar | : | Naming words specific (Part I) |
| 6. Vocabulary | : | Word Formation |

UNIT III: HUMAN INTEREST

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

UNIT IV: DISASTER MANAGEMENT

- | | | |
|----------------------|---|--|
| 1. Reading | : | The Cuddalore Experience-Anu George |
| 2. Writing | : | Basics of Essay Writing |
| 3. Listening | : | Listening for theme |
| 4. Speaking | : | Congratulating, offering sympathy, condolences and making complaints |
| 5. Grammar | : | Tenses |
| 6. Vocabulary | : | Phrasal verbs |

UNIT V: HUMOUR

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

UNIT VI: OUTLOOK

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

TEXT BOOKS:

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

REFERENCES:

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

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3	1	0	3

**(101MA01) ENGINEERING MATHEMATICS –I
(Common to all branches except Bio-Technology)**

UNIT-I

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

UNIT-II

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

UNIT-III**Sequences and series & Mean value theorems**

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

UNIT-IV**Functions of several variables & partial differentiation**

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

UNIT-V

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

UNIT-VI

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

Text Books:

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

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.
3. Jain, S.R.K, Advanced Engineering Mathematics, Narosa Publishing House, London 2002.

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**(101PH01) ENGINEERING PHYSICS –I
(Common to all branches)**

UNIT - I

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

UNIT-II

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

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

UNIT- III

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

UNIT-IV

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

UNIT-V

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

UNIT-VI

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

Text Books:

1. Introduction to Solid State Physics, by Charles Kittel
2. Engineering Physics P K Palanisamy

Reference Books:

1. Solid State Physics Neil by W. Ashcroft , N. David Mermin
2. Statistical Mechanics by Donald Allan McQuarrie
3. Statistical Mechanics by Sathya Prakash
4. Quantum Mechanics by John L Powel
5. Principles of quantum Mechanics by Ramamurti Shanker
6. Applied Physics by M Chandrashekar and P Appla Naidu
7. Modern Engineering Physics by K. Vijaya Kumar, S Chandralingam

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**(101CH01) ENGINEERING CHEMISTRY
(Common to all branches except Bio-Technology)**

UNIT-I: WATER TECHNOLOGY

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

UNIT II: ELECTROCHEMISTRY

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

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

UNIT III: CORROSION AND ITS CONTROL

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

UNIT-IV: PHASE RULE AND ADSORPTION

Phase rule- Definition and terminology, Application of phase rule to Water system and Ag-Pb system.

Adsorption: Definition, types, Adsorption of gases on solids, Langmuir adsorption isotherm, BET adsorption equilibrium.

UNIT – V: POLYMER TECHNOLOGY

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

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

Conducting Polymers: Poly acetylene, polyaniline and their applications.

UNIT-VI: FUELS AND LUBRICANTS

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

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

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

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

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

Text Books:

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

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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I Year B.Tech.ECE – I Semester

L	T	P/D	C
3	1	-	3

**(101IT01) COMPUTER PROGRAMMING
(Common to all branches)**

UNIT – I

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

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

UNIT – II

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

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

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

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

UNIT – III

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

Parameter passing – Call by value and call by reference.

Recursive functions – Definition, examples, advantages and disadvantages.

Macros – Definition, examples, comparison with functions.

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

UNIT – IV

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

Strings – Input output functions, string handling functions.

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

UNIT – V

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

UNIT – VI

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

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

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

Text Books:

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

References:

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

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**(101ME01) ENGINEERING DRAWING-I
(Common to all branches)**

UNIT – I

INTRODUCTION TO ENGINEERING DRAWING: Drawing Instrument and their use Types of lines, use of pencils, Lettering, Rules of dimensioning.

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

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

Curves used in Engineering Practice and their Constructions.

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

UNIT – II

DRAWING OF PROJECTIONS OR VIEWS ORTHOGRAPHIC PROJECTION IN FIRST ANGLE PROJECTION ONLY: Principles of Orthographic Projections – Conventions – First and Third Angle Projections, Projection of Points, Projection of Lines - inclined to both planes, True lengths, traces.

UNIT – III

PROJECTIONS OF PLANES: Projections of regular Planes, Traces, Oblique planes. Introduction to Auxiliary planes

UNIT –IV

PROJECTIONS OF SOLIDS:

Projections of Regular Solids – Regular Polyhedra, solids of revolution, Axis inclined to both planes – Alteration of position and Auxiliary plane method.

UNIT –V

SECTIONS OF SOLIDS:

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

UNIT –VI

DEVELOPMENT OF SURFACES:

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

TEXT BOOKS:

1. Engineering Drawing, N.D. Bhat / Charotar
2. Engineering Drawing, Narayana and Kannaiah / Scietech publishers.

REFERENCES:

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

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

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**(101EN71) ENGLISH LANGUAGE LAB – I
(Common to all branches)**

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

OBJECTIVES:

1. To expose the students to a variety of self-instructional, learner-friendly modes of language learning.
2. To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required facility to face computer-based competitive exams such as GRE, TOEFL, GMAT etc.
3. To enable them to learn better pronunciation through stress on word accent, intonation, and rhythm.
4. To train them to use language effectively to face interviews, group discussions, public speaking.
5. To initiate them into greater use of the computer in resume preparation, report writing, format-making etc.

SYLLABUS:

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

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

MINIMUM LAB REQUIREMENTS

The English Language Lab shall have two parts.

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

System Requirement (Hardware component)

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

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

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

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(Common to all branches)

**(101PH71)PART-A: ENGINEERING PHYSICS LAB – I
(Any six of the following are to be conducted)**

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

(101CH71)PART-B: ENGINEERING CHEMISTRY LAB

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
- a. Preparation of Polymer (Thiokol rubber).
8. Determination of Flash and Fire point of a fuel using Abel's / Pensky – Martin's Apparatus.
9. Determination of Calorific value of a solid fuel by Bomb Colorimeter.
10. Grease penetration Test.

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**(101IT71) 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 using RAPTOR tool and test it using the data: 0°C , 35°C , 55.35°C , and 100°C .
2. Write an algorithm to find the largest of three given numbers and draw a flowchart using RAPTOR tool and test it for data: (5, 7, 2), (3.5, 5.8, 9.2), (112, 19.6, 82.7).
3. Write an algorithm and draw a flowchart for finding the roots and nature of roots of a quadratic equation, given its coefficients and test it for data: (1, 3, 2), (2, 1, 6), (6, 5, 1).

2. Unit I (Cycle 2)

1. Write an algorithm and draw a flowchart for computing the sum of the digits of a given integer and test it for the data: 3259, 89725, 10092.
2. Write an algorithm and draw a flowchart to test whether a given integer is a prime number or not. Test for the data: 29, 35, 89.
3. Write an algorithm and flowchart for printing the first n Fibonacci numbers, give n. Test using the data: 10, 25, 50.

3. Unit II (Cycle 3)

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

4. Unit II (Cycle 4)

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.

5. Unit II (Cycle 5)

1. Write a program that reads a letter given by the user and prints whether it is a vowel or not.
2. An institution gives grades to its students as follows:
 - a. Grade A if he gets 80 or more marks
 - b. Grade B if he gets between 60 and 79 (both inclusive)
 - c. Grade C if he gets between 50 and 59 (both inclusive)
 - d. Grade D if he gets between 40 and 49 (both inclusive)
 - e. Grade F otherwise.
 Marks of student are always an integer ranging from 0 to 100. Use case structure to print the grade obtained by the candidate, given his marks.
3. Write three C programs to print a multiplication table for a given number using while, do..while, and for loops.

6. Unit II (Cycle 6)

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

7. Unit III (Cycle 7)

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.

8. Unit III (Cycle 8)

1. Write a menu driven style program to compute the above functions (cycle 7) on the choice of the function given by the user.
2. Write a C program to solve the problem of Towers of Hanoi.
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.

9. Unit III (Cycle 9)

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.
4. 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.

10. Unit IV (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.
3. Write a C program to implement the operations of matrices – addition, subtraction, multiplication.
4. Write a program to find whether a given matrix is symmetric, lower triangular, upper triangular, diagonal, scalar, or unit matrix.

11. Unit IV (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.

12. Unit IV (Cycle 12)

1. Define a structure student having members roll no., name, class, section, marks. Create an array of 10 students give the data and find the average marks, section-wise.
2. Define functions – length of the string, copy, concatenate, convert into upper case letters, compare two strings for alphabetical order – over strings and implement them in a program.

13. Unit V (Cycle 13)

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.

14. Unit V (Cycle 14)

1. Store the marks of the students of a class into file and the display the results as per the rules of your institution.
2. In the above file search a student by roll no. and display the particulars.

15. Unit VI (Cycle 15)

1. Write a program to draw figure of your liking with appropriate colors.
2. Write a program to implement simple bank transactions – opening an account, closing an account, deposit money into an account, withdraw money from an account, maintaining the customer database, and daybook.

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- I

(Common to all branches)

(101ME71)PART A: ENGINEERING WORK SHOP –I

1. HOUSE WIRING

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

2. HOME APPLIANCES

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

3. WELDING

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

4. MACHINE SHOP (DEMONSTRATION)

- Operations performed on Lathe, Drilling, Milling and grinding machines

(101IT72)PART B: IT WORK SHOP - I

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

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

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

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

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

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

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

WEEK 7 : Introduction to Internet & LAN

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

Search Engines:

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

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(101EN02) ENGLISH – II (English Language teaching through literature)

(Common to all branches)

UNIT – I

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

UNIT – II

- | | | |
|--------------------------|---|---|
| 1. Speech | : | Polonious Speech –An extract from Shakespeare’s <i>Hamlet</i> |
| 2. Short Story | : | Ha’ Penny – Alan Paton |
| 3. Sentence Construction | | |

UNIT – III

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

UNIT – IV

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

UNIT – V

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

UNIT –VI

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

Text Books:

1. Inspiring Speeches and Lives; B. Yadhava Raju, Maruthi Publications, Guntur.
2. Vignettes of Life, Mcmillan Publishing House

Reference Books:

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

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**(101MA03) ENGINEERING MATHEMATICS – II
(Common to all branches except Bio-Technology)**

UNIT-I

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

UNIT-II

Ordinary Linear Differential Equations Of Higher Order: Linear differential equations of second and higher orders with constants coefficients – Method of variation of parameters – Systems of linear differential equations with constant coefficients – Applications: Bending of beams, electrical circuits, Simple harmonic motion.

UNIT-III

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

Inverse Laplace transforms Inverse Laplace transform, Shifting theorems, Partial fraction method, convolution theorem (without proof), solutions of ordinary differential equations with constant coefficients and systems of linear differential equations with constant coefficients using Laplace transformations.

UNIT-IV

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

UNIT-V

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

UNIT-VI

Vector Calculus- Scalar and vector fields, vector differentiation, level surfaces, directional derivative, gradient of a scalar field, divergence and curl of a vector field, Laplacian operator and related properties. Line and surface integrals, Green's theorem in plane, Gauss-Divergence theorem, Stoke's theorem and verification of problems (without proof).

Text Books:

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

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.
3. Jain, S.R.K, Advanced Engineering Mathematics, Narosa Publishing House, London 2002.

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**(101PH02) ENGINEERING PHYSICS – II
(Common to EEE, ECE, ECM, CSE and IT)**

UNIT-I

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

UNIT-II

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

UNIT-III

Dielectric Properties: Electric Dipole, Dipole Moment, Dielectric Constant, Electric Susceptibility, Polarizability, Electronic, Ionic and Orientation Polarizations and Calculation of Polarizabilities -Internal Fields in Solids, Clausius -Mossotti Equation, Piezo-electricity, Pyro-electricity and Ferro- electricity.

UNIT - IV

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

UNIT - V

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

Fiber Optics: Principle of Optical Fiber, Acceptance Angle and Acceptance Cone, Numerical Aperture, Types of Optical Fibers and Refractive Index Profiles – step & Graded index optical fiber, Attenuation in Optical Fibers, Application of Optical Fiber in communication system.

UNIT - VI

Nanotechnology: Origin of Nanotechnology, Nano Scale, Surface to Volume Ratio, Quantum Confinement, Bottom-up Fabrication: Sol-gel, Precipitation, Combustion Methods; Top-down Fabrication: Chemical Vapour Deposition, Physical Vapour Deposition, Pulsed Laser Vapour Deposition Methods, Characterization (XRD&TEM), carbon nanotubes, Magnetic tunnel junction, Giant magneto resistance (GMR) devises.

Text Books

1. Electrical Engineering Materials by A. J Decker
2. Applied Physics by M Chandrashekar and P Appla Naidu

Reference Books:

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

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**(101CS01) 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 trees, terminology, representation, traversals, Minimal Spanning trees.

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

UNIT - IV

Searching - Linear and binary search methods.

Sorting - Bubble sort, selection sort, Insertion sort, Quick sort, merge sort.

UNIT – V

Introduction to c++ programming-object oriented programming concepts, Structured Vs OOP.

Classes and objects-class definition, Objects, class scope and accessing members, access functions and utility functions.

UNIT – VI

Constructors-default constructor, parameterized constructor, constructor initialization list, copy constructor.

Destructors, Static class members this pointer, friend functions and classes, Dynamic memory management with operators new and delete.

Overloading-function overloading, Operator overloading, restrictions on operator overloading, overloading unary and binary operators, type conversion, templates, inheritance.

TEXT BOOKS :

1. Data Structure Through C by Yashavant Kanetkar.
2. The complete reference C++ By Herb Schildt.

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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**(101ME02) ENGINEERING DRAWING - II
(Common to all branches)**

UNIT – I**INTERSECTION OF SIMILAR SOLIDS:**

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

UNIT – II**INTERSECTION OF DIS-SIMILAR SOLIDS:**

Cylinder Vs prism, Cylinder Vs cone, Cone Vs Prism

UNIT – III**ISOMETRIC PROJECTIONS :**

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

UNIT –IV**TRANSFORMATION OF PROJECTIONS:**

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

UNIT –V**PERSPECTIVE PROJECTION:**

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

UNIT –VI**INTRODUCTION TO COMPUTER AIDED DRAFTING:**

Generation of points, lines, curves, polygons, simple solids, dimensioning.

TEXT BOOKS:

1. Engineering Drawing, N.D. Bhat / Charotar
2. Engineering Drawing, Narayana and Kannaiah / Scitech publishers.

REFERENCES:

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

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**(101EC05) ELECTRONIC DEVICES AND CIRCUITS
(Common to ECE,ECM and EEE)**

UNIT-I

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

UNIT-II

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

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

UNIT-III

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

UNIT-IV**FIELD EFFECT TRANSISTOR:**

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

UNIT-V

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

UNIT- VI

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

Text Books

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

References:

1. Integrated Electronics- J.Millman, C.C.Halkias, 1991 ed., 2008, TMH.
2. Electronic Devices and Circuits – K.LalKishore, 2 ed., 2005, BSP
3. Electronic and Radio Engineering-F.E Terman, McGraw-Hill, 4th ed., 1955
4. Microwave Devices and Circuits-Samuel Y. Liao, PHL, 3rd Edition, 1994

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**(101EE43) 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 transformations – Kirchoff's laws – network reduction techniques – series, parallel, series parallel, star – to –delta and or delta – to – star transformation, Mesh Analysis, Nodal analysis, Super mesh, super node concept.

UNIT – II SINGLE PHASE A.C. CIRCUITS:

R.M.S and Average values and form factor for different periodic wave forms, Steady state Analysis of R, L, and C (in series, Parallel and series parallel combinations) with sinusoidal excitation – Concept of self and mutual inductances – dot convention-coefficient of coupling, series circuit analysis with mutual inductance. Resonance – series, parallel circuits, concept of band width and Q factor.

UNIT – III NETWORK TOPOLOGY:

Definitions – Graph- Tree – Basic cutset and Basic Tieset matrices for planar networks – Loop and Nodal method of analysis of Networks with independent and dependent voltage and current sources – Duality & Dual networks.

UNIT – IV NETWORK THEOREMS:

Tellegens, Superposition, Reciprocity, Thevenin's, Norton's, Max Power Transfer Theorem. Millman's Theorem – Statement and proofs problem solving using dependent and independent sources for 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 – problem solving.
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) for d.c. and sinusoidal excitations – initial conditions – solution using differential equation approach and Laplace transform methods of solutions.

Text books:

1. Engineering Circuit Analysis – William Hayt and Jack E Kemmerly, Mc Graw Hill 5th Edition, 1993.
2. Network Analysis – N.C. Jagan and C.Lakshminarayana, B.S.Publications, 2006.

References:

1. Electric Circuits – J. Edminister and M.Nahvi – Schaum's Outlines, TMH, 1999.
2. Electrical Circuits by A.Chakarborthy, Dhanpath Rai & Co.,
- 3.

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(101EN72) 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.

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

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

I Year B.Tech.ECE – II Semester

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(101CS71) 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.

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I Year B.Tech.ECE – II Semester

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**ENGINEERING WORKSHOP – II AND ENGINEERING PHYSICS LAB
(Common to ECE)**

(101ME72)PART –A: ENGINEERING WORKSHOP – II

1. Fitting

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

2. Tin Smithy

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

3. Smithy

- Fabrication of S - Shape
- Fabrication of Hook shape

4. Plumbing (demonstration)

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

(101PH72)PART-B: ENGINEERING PHYSICS LAB - II

1. Hall effect
2. Dielectric constant of a given material
3. Characteristics of Laser diode.
4. Numerical aperture of optical fiber.
5. Bending loss of optical fiber.
6. Stewart & Gee's Experiment (Determination of magnetic induction flux density along the axis of a circular coil).
7. Newton's rings
8. Determination of rigidity modulus of a given metal wire - Torsional Pendulum
- 9.** Determination of the acceleration due to gravity by compound pendulum.
- 10.** Ultrasonic sound Velocity

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I Year B.Tech.ECE – II Semester

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**(101MA05) MATHEMATICAL TOOLS
(Common to ECE & ECM)**

UNIT I

PROBABILITY AND STATISTICS : Conditional probability, Random variables, Expectation, Discrete and continuous distribution, Binomial, Poisson, Normal, Exponential and uniform distributions, correlation and regression analysis.

UNIT II

NUMERICAL METHODS: Solution of linear and nonlinear algebraic equations, Numerical solution of differential equations.

Unit III

COMPLEX VARIABLES: Analytic functions, Cauchy-Riemann equations, Complex integration, Cauchy's integral theorem, Cauchy's integral formula, Taylor's and Laurent's series, Cauchy's residue theorem.

UNIT-IV

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

UNIT-V

FOURIER TRANSFORMS: Fourier transformation, sine and cosine transformations, Finite Fourier transforms.

UNIT-VI

INTRODUCTION TO SPECIAL FUNCTIONS: Beta- Gamma Functions-Bessel's Functions-properties-Legendre's Polynomials and properties.

Text Books:

1. Higher Engineering Mathematics, B.S. Grewal , Khanna Publications, New Delhi.
2. Jain, S.R.K.Iyengar, Advanced Engineering Mathematics, Narosa Publishing House, London 2002.

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.
3. Engineering Mathematics, B.V.Ramana, Tata McGraw Hill Publishing Company Ltd.

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**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY
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II Year B. Tech. ECE - I Sem

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**(101EC06) SWITCHING THEORY AND LOGIC DESIGN
(Common to ECE and ECM)**

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 PAL. Realization of Simple Switching functions using PLDs.

UNIT - V

Symmetric Networks: Properties of Symmetric Functions, Symmetric relay contact networks, Identification and realization of symmetric functions.
Threshold Logic: Capabilities and limitations of Threshold gate. Synthesis of threshold functions. Multigate Synthesis.

UNIT - VI

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

Text Books:

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

References:

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

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II Year B. Tech. ECE - I Sem

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**(101ME04) BASIC MECHANICAL ENGINEERING
(Common to all the branches except Bio tech)**

UNIT – I

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

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

UNIT – II

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

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

UNIT – III

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

UNIT – IV

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

UNIT- V

Metal casting: Casting methods and their characteristics, advantages, limitations and applications.
Welding: Types of welding - arc welding, gas welding & gas cutting, resistance welding, soldering and brazing.

UNIT - VI

Mechanical working of metals: Hot working and cold working processes, Press working, differences, basic processes and their characteristics, advantages, limitations and applications.

Machine Tools:

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

TEXT BOOKS :

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

REFERENCES :

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

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

II Year B. Tech. ECE - I Sem

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**(101EE42) PRINCIPLES OF ELECTRICAL ENGINEERING
(Common to ECE and ECM)**

UNIT – I D.C. GENERATORS :

D.C. Generators – Principle of operation – constructional features – armature windings – lap and wave windings – E. M.F Equation – types of d.c generators- build-up of E.M.F – O.C. characteristics, critical field resistance and critical speed - Load characteristics of shunt, series and compound generators.

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 - Swinburne's test - efficiency – condition for maximum efficiency

UNIT-III - SINGLE PHASE TRANSFORMERS :

Single phase transformers-types - constructional details- emf 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 emf and rotor frequency - rotor reactance, rotor current and pf at standstill and running operation. Torque derivation for standstill and running conditions – slip torque characteristic- power flow and efficiency.

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. Principle of operation of synchronous motor. Damper windings.

UNIT – VI- SINGLE PHASE MOTORS: Single phase Motors: Single phase induction motor – Constructional features-Double revolving field theory – split-phase motors – shaded pole motor. Principle & performance of A.C. Series motor-Universal motor, Stepper motor and Tacho.

TEXT BOOKS:

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

REFERENCE BOOKS:

1. Principles of Electrical Engineering by V.K.Mehata
2. Electrical Technology by Edward Huges.

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II Year B. Tech. ECE - I Sem

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(101EC07) ELECTRONIC CIRCUIT ANALYSIS

Unit-I

MULTISTAGE AMPLIFIERS: Review of Transistor Amplifiers. CE-CC Configurations, RC coupled (two stage), Difference amplifiers, Miller's theorem.

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 - Harmonic distortion – Conversion efficiency and relative performance - Wide band amplifiers - Broad banding techniques - Low frequency and high frequency compensation – CC–CE cascade, cascade amplifier, Darlington pair – Broad banding using inductors.

UNIT-IV

TUNED AND RF AMPLIFIERS: single tuned-stagger tuned-wideband tuned amplifiers, low noise amplifiers(LNA),High frequency power amplifiers using GaAs FETs.

UNIT-V

FET AMPLIFIERS: Biasing of JFET - Self bias and fixed bias. Biasing of MOSFETS -. Depletion and Enhancement mode. Analysis and design 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 Circuits –S.Salivahanan,N.Suresh Kumar,A Vallavaraj, 2ed., 2009,TMH.

References:

1. Electronic devices and Circuit Theory-Robert L. Boylsted,Louis Nashelsky,9th ed., 2008,PE
2. Electronic Circuit Analysis-K.Lal Kishore,2004,BSP
3. Microelectronic Circuits – Sedra and Smith-5th ed., 2009,Oxford UniversityPress

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II Year B. Tech. ECE - I Sem

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(101EC08) SIGNALS AND SYSTEMS

UNIT-I

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

UNIT-II**FOURIER REPRESENTATION OF CONTINUOUS TIME SIGNALS:**

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

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

UNIT-III

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

UNIT-IV

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

UNIT-V

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

UNIT-VI

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

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

Text Books:

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

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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(AUTONOMOUS)**

II Year B. Tech. ECE - I Sem

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**(101EN73) 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. Technical Report Writing Today
3. How to build a better vocabulary –Nurnberg Maxwell & Morris Rosenblum: Grand Central Publishing
4. Six weeks to words of power –Funk Wilfred: W.R.Goyal Publishers & Distributors
5. Word power made easy – Norman Lewis
6. Norman Lewis, How to read better and faster: W.R.Goyal Publishers, New Delhi

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II Year B. Tech. ECE - I Sem

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(101EC71) ELECTRONIC DEVICES AND CIRCUITS LAB

PART A : (Only for viva voce Examination)

ELECTRONIC WORKSHOP PRACTICE (in 6 lab sessions) :

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

CRO Varieties and Operations:

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

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

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

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

PART C:**Equipment required for Laboratories:**

- | | | |
|---------------------------------------|---|---|
| 1. Regulated Power supplies (RPS) | - | 0-30v |
| 2. CROs | - | 0-20M Hz. |
| 3. Function Generators | - | 0-1 M Hz. |
| 4. Multimeters | | |
| 5. Decade Resistance Boxes/Rheostats | | |
| 6. Decade Capacitance Boxes | | |
| 7. Micro Ammeters (Analog or Digital) | - | 0-20 μ A, 0-50 μ A, 0-100 μ A, 0-200 μ A |
| 8. Voltmeters (Analog or Digital) | - | 0-50V, 0-100V, 0-250V |
| 9. Electronic Components | - | Resistors, Capacitors, BJTs, LCDs, SCRs, UJTs, FETs, LEDs, MOSFETs, diodes (germanium & silicon type), transistors (npn & pnp type) |

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(101EC72) BASIC SIMULATION LAB

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 realizability and stability
9. Gibbs phenomena
10. Fourier Transform of given signal and plot its magnitude and phase spectrum
11. Waveform synthesis using Laplace transform
12. Locating poles and zeros and plotting pole-zero maps in S-plane and Z-plane for given transfer function
13. Generation of Gaussian noise, computing its mean, M S value and PSD
14. Removal of noise by ACF/CCF
15. Verification of Weiner-Khinchine relation
16. Checking Random process for stationary in wide sense
17. Sampling theorem verification
18. Extraction of periodic signal masked by noise using Correlation
19. Finding stability of system using inverse Z Transform
20. Finding PDF for given N Random variables

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**(101CH03) 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, Myoglobin), 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, El 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, mantle, 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 disease, Water(prevention and control of pollution) Act 1974, Definition, Causes, Effect and Control measures: Soil pollution, Noise Pollution and Marine Pollution, Waste management- Solid waste Hazardous waste and E-Waste Management, Disaster Management Floods, Earth quakes and Cyclones.

TEXT BOOKS:

1. INTRODUCTION TO ENVIRONMENTAL SCIENCE –by Dr. Y. Anjaneyulu, B.S. Publications 2004.
2. ENVIRONMENTAL STUDIES by Erach bharucha 2005, University grants commission, University press.

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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(AUTONOMOUS)**

II Year B. Tech. ECE - II Sem

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**(101MB01) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Common to ECE,EEE,IT,ECM)**

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)

TEXT BOOKS:

1. Aryasri: Managerial Economics and Financial Analysis, 2/e, TMH, 2005.

REFERENCES:

1. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi.
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.

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

II Year B. Tech. ECE - II Sem

L	T	P/D	C
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**(101EC09) 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.

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.
Design of transistor switch

UNIT- IV**BISTABLE MULTIVIBRATOR (BMV):**

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

Unit – V**Monostable Multivibrator (MMV):**

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

Astable multivibrator (AMV) collector coupled AMV- Emitter coupled AMV.

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.

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SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)
II Year B. Tech. ECE - II Sem

L T P/D C
3 1 - 3

(101EC10) 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, statistical independence.

UNIT-II

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

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

UNIT-III

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

UNIT-IV

STATIONARITY AND CORRELATION THEORY: Strict-sense 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; low-pass and band-pass processes, power and bandwidth calculations; cross-power spectral density function and its properties; power spectral density function of random sequences.

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

UNIT-V

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

UNIT-VI

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

Text Books:

1. Peyton Z. Peebles Jr., Probability, Random Variables and Random Signal Principles, 4th 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

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

II Year B. Tech. ECE - II Sem

L	T	P/D	C
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(101EC11) ANALOG COMMUNICATIONS**UNIT-I****LINEAR MODULATION:**

Introduction to Analog communications, Frequency translation, Amplitude modulation-spectrum of AM signals-power relations. Double sideband suppressed carrier and single sideband modulation- spectrum of DSB/SC and SSB signals. Vestigial sideband modulation and spectrum.

Generation and Detection of AM/DSBSC/SSB/VSB/ISB signals. Frequency translation and frequency division multiplexing. Propagation characteristics of AM signals, Commercial Applications

UNIT-II**ANGLE MODULATION:**

Frequency modulation-Narrowband FM and wideband FM- spectrum of FM signals-Transmission bandwidth. Generation of FM signals- direct and indirect methods, Detection of FM signals. Propagation characteristics of FM. Phase modulation-relationship between FM and PM signals, Commercial Applications.

UNIT-III**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. Group and Phase Delays, Intermodulation products.

UNIT-IV**TRANSMITTERS :**

Classification of Transmitters, AM Transmitter, Effect of feedback on performance of AM Transmitter, FM Transmitter, Frequency stability in FM Transmitter

UNIT-V**RECEIVERS:**

Tuned Radio Frequency receivers and super-heterodyne receivers, Noise figure- Image frequency and Intermediate frequency- Automatic gain control-coherent detection and envelope detection of AM signals.

FM detection-Basic FM demodulators-Amplitude limiting-ratio detector-PLL for FM detection-Pre-emphasis and de-emphasis. DSB-SC and SSB demodulation.

UNIT-VI**PULSE MODULATION:**

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

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. Communication Systems – B.P Lathi, BS Publications, 2006
4. R.E. Ziemer and W.H. Tranter, "Principles of Communication", JAICOP Publishing House
5. A. Bruce Carlson, "Communication systems", third edition, MGH,

References:

1. Electronics & Communication System-George Kennedy and Bernard Davis, TMH 2004
2. Dennis Roddy, John Coolen, "Electronic Communications", PHI 1997
3. B.P. Lathi, "Modern Digital and Analog Communication Systems" 3rd Ed. Oxford University Press.
4. Tomasi: Electronic communication: Fundamentals through advanced, Pearson Education
5. Couch: Digital and Analog Communication Systems, Pearson Education

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II Year B. Tech. ECE - II Sem

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(101EC12) 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. Poynting 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-Matthew N.O Sadiku, 4ed., 2008, Oxford Univ.Press
4. Transmission Lines and Networks by Umesh Sinha

References:

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

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

II Year B. Tech. ECE - II Sem

L T P/D C
0 0 2 2

**(101EN74) 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.
5. Body Language – Your success Mantra by Shalini Verma, S Chand, 2006

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**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY
(AUTONOMOUS)****II Year B. Tech. ECE - II Sem**

L	T	P/D	C
0	0	0	1

(101EC90) COMPREHENSIVE VIVA-VOCE -I**Max Marks: 50**

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 students understanding in various subjects he / she studied during the B. Tech. course of study. There are no internal marks for the Comprehensive Viva-Voce.

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II Year B. Tech. ECE - II Sem

L	T	P/D	C
0	0	3	2

(101EC79) PULSE & DIGITAL CIRCUITS LAB

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 MHz. |
| 3. Function Generators | - | 0 – 1 MHz |
| 4. Components | | |
| 5. Multi Meters | | |

2010-2011

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

II Year B. Tech. ECE - II Sem

L	T	P/D	C
0	0	3	2

(101EC77) 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

COURSE STRUCTURE AND DETAILED SYLLABUS

for

B.Tech – III and IV Year

in

ELECTRONICS AND COMMUNICATION ENGINEERING

(Applicable from the Academic Year 2010-2011)



SREENIDHI INSTITUTE OF SCIENCE & 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****I Year – I Semester**

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

I Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101EN02	English – II	2	---	---	2	30	70
2	101MA03	Engineering Mathematics – II	3	1	---	3	30	70
3	101PH02	Engineering Physics – II	3	1	---	3	30	70
4	101CS01	Data Structures and C ++	3	1	---	3	30	70
5	101ME02	Engineering Drawing – II	1	---	2	2	30	70
6	101EC05	Electronic Devices and Circuits	4	1	---	4	30	70
7	101EE43	Network Analysis	3	1	---	3	30	70
8	101EN72	English Language Lab - II	---	---	2	1	25	50
9	101CS71	Data Structures and C ++ Lab	---	---	3	2	25	50
10	101ME72	Engineering Workshop – II /	---	---	3/2	1	25	50
11	101PH72	Engineering Physics Lab- II	---	---	3/2	1	25	50
Total			19	5	10	25	310	690

II Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101MA05	Mathematical Tools	3	1	---	3	30	70
2	101EC06	Switching Theory and Logic Design	3	1	---	3	30	70
3	101ME04	Basic Mechanical Engineering	3	1	0	3	30	70
4	101EE42	Principles of Electrical Engineering	3	1	0	3	30	70
5	101EC07	Electronic Circuit Analysis	4	1	0	4	30	70
6	101EC08	Signals and Systems	3	1	0	3	30	70
7	101EN73	Functional and Communicative Written English	---	---	2	2	25	50
8	101EC71	Electronic Devices & Circuits Lab	---	---	3	2	25	50
9	101EC72	Basic Simulation Lab	---	---	3	2	25	50
Total			19	6	8	25	255	570

II Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101CH03	Environmental Studies	3	1	---	3	30	70
2	101MB01	Managerial Economics and Financial Analysis	3	1	---	3	30	70
3	101EC09	Pulse and Digital Circuits	3	1	---	3	30	70
3	101EC10	Probability Theory and stochastic Process	3	1	---	3	30	70
4	101EC11	Analog Communications	3	1	---	3	30	70
6	101EC12	Electromagnetic Theory and Transmission Lines	3	1	---	3	30	70
7	101EN74	Effective English Communication and Soft Skills	---	---	2	2	25	50
8	101EC90	Comprehensive Viva Voce – I	---	---	---	1	---	50
9	101EC79	Pulse and Digital Circuits Lab	---	---	3	2	25	50
10	101EC77	Electronic Circuit Analysis Lab	0	0	3	2	25	50
Total			18	6	8	25	255	620

III Year – I Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1		Open Elective – I	2	1	---	2	30	70
2	101EC13	Linear and Digital IC Applications	3	1	---	3	30	70
3	101BT37	Human Values, Ethics and IPR	2	--	--	2	30	70
4	101EC14	Antennas and Wave Propagation	4	1	--	4	30	70
5	101EC15	Digital Signal Processing	4	1	--	4	30	70
7	101MA71	Logical Reasoning – I	---	--	2	2	25	50
8	101EC91	Group Project	--	--	3	1	25	50
9	101EC73	Linear and Digital IC Applications Lab	--	--	3	2	25	50
10	101EC75	Digital Signal Processing Lab	--	--	3	2	25	50
11	101EC74	Analog Communications Lab	--	--	3	2	25	50
Total			15	4	14	24	275	600

III Year – II Semester

S.No.	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	101EM05	Microprocessor & Microcontrollers	3	1	--	3	30	70
2		Open Elective – II	3	--	--	3	30	70
3		Professional Elective-I	3	1	--	3	30	70
4	101EC17	Digital Communications	4	1	--	4	30	70
5	101EM07	VLSI Design	4	1	--	4	30	70
6	101MA72	Quantitative Aptitude	--	--	2	2	25	50
7	101EC92	Comprehensive Viva Voce – II	--	--	--	1	--	50
8	101EM71	Microprocessors and Microcontrollers Lab	--	--	3	2	25	50
9	101EC80	Digital Communication Lab	--	--	3	2	25	50
10	101EM73	VLSI lab	--	--	3	2	25	50
Total			19	4	11	26	250	600

IV Year – I Semester

S.No.	Subject Code	SUBJECT	L	T	P/D	C	Max. Marks	
							Int	Ext
1	101MB02	Management Science	3	1	--	3	30	70
2	101EC19	Linear Control Systems	3	1	--	3	30	70
3	101EC20	Micro Wave Engineering	3	1	--	3	30	70
4	101CS05	Computer Networks	3	1	--	3	30	70
5	101EC25	Cellular and mobile communications	3	1	--	3	30	70
6		Professional Elective – II	3	1	--	3	30	70
7	101MA73	Logical Reasoning – II	--	--	2	2	25	25
8	101EC93	Pre Project Seminar	--	--	--	2	50	--
9	101EC94	Industry oriented Mini Project Evaluation	--	--	--	2	25	50
10	101CS91	Computer Networks Lab	--	--	3	2	25	50
11	101EC82	Micro Wave and Optical Communications Lab	--	--	3	2		
Total			18	6	8	28	305	545

IV Year – II Semester

S.No.	Subject Code	SUBJECT	L	T	P/D	C	Max. Marks	
							Int	Ext
1	101EC27	Wireless communication and networks	4	--	--	4	30	70
2		Professional Elective – III	4	--	--	4	30	70
3	101EC95	Project	--	--	--	10	50	150
4	101EC96	Comprehensive Viva Voce – III	--	--	--	2	--	50
5	101EC97	Technical Seminar	--	--	--	2	25	--
Total			8	--	--	22	135	340

ELECTIVE SUBJECTS

Open Electives			Professional Electives		
Open Elective-I			Professional Elective-I		
1	101FL01	Basic Spanish Language	1	101EC22	Telecommunication Switching Systems and Networks
2	101FL02	Basic French Language	2	101EC23	Satellite Communication
3	101FL03	Basic German Language	3	101EC24	Digital Design Through Verilog HDL
4	101MB52	Technology of Management	4	101CS03	Object Oriented Programming through JAVA
5	101MB55	Entrepreneurship			
6	101IT09	Web Technologies			
Open Elective-II			Professional Elective-II		
1	101MB56	Banking, Insurance and Risk Management	1	101EM03	Computer Organization
2	101IT10	Neural Networks and Fuzzy Logic	2	101EM06	Embedded & Real Time Systems
3	101EC35	Quality and Reliability Engineering	3	101EC26	Optical Communications
			4	101EC70	Industrial Automation
			Professional Elective-III		
			1	101EC28	Multimedia Communications
			2	101EC29	Image and Speech Processing
			3	101EC31	Radar Systems
			4	101CS07	Operating Systems

Open Elective - I
Basic Spanish Language
(Common to all branches)

Code:101FL01

L	T	P/D	C
2	2	-	2

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

A) Aims and Objectives of the Course

- i) To develop the following skills: Listening, speaking, reading & writing.
Learners should be able to
 - a) listen and comprehend elementary structures of the spoken language.
 - b) participate in simple conversations in different situations of every day life.
 - c) read and understand simple texts.
 - d) write sentences and short paragraphs on general topics and situations.

- ii) To develop creative aspect in language learning i.e. the ability to work out different patterns and combinations with the help of basic grammatical structures and lexical items.

- iii) To introduce the learners to aspects of life and culture of Spanish and Latin American people.

B) Course Contents**Functional Aspects**

- Unit-1 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 qué', and 'quién'; causal phrase with 'porque'; 'ser' and 'estar'; negative sentences; adjectives of nationality.
- Unit-2 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-3 To express opinions on something, contradict someone in a 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', their form and syntax, interrogative pronouns.
- Unit 4 Invitations; accepting and rejecting invitations; how to fix an appointment;
- Grammatical Aspects**
Present indicative of irregular verbs, expressions with 'tener' estar prepositional pronouns; interrogative sentences.
- Unit 5 Expression of time; Spanish and Latin American time tables and comparison with Indian time tables.
- Grammatical Aspects**
Time with 'ser'
- Unit 6 Expressions relating climate, weather of the day
Seasons. Vacations
- Grammatical Aspects**
Expressions with the verbs 'ser' and 'hacer'

Techniques of Instruction

Without prejudice to the specific language teaching approach adopted by the teacher, the following parameters are suggested for realizing the above objectives and contents:

1. To avoid monotony in the classroom and to reduce the role of mechanical reproduction of the material learnt, stress should be laid on creativity in the classroom.
2. Use of modern technical aids, such as slide projectors, tape recorders, computers, CD-ROMs etc. should be encouraged.
3. Supplementary teaching material on cultural aspects, such as art, films etc. may be used in the classroom. An intercultural approach should be encouraged.
4. Methods/techniques should be employed, which would encourage the learners to do independent work by way of reading writing and self-correction.

Books recommended:

1. ELE INICIAL 1
2. Espanol sin Fronteras, A. Sánchez, M. Ríos, J.A. Metalla. SGEL, Madrid, 1997.
3. Entre Nosotros A. Sánchez, M. Ríos, J.A. Metalla. SGEL, Madrid, 1997.

Open Elective - I
Basic French language
(Common to all branches)

Code: 101FL02

L	T	P/D	C
2	2		2

UNITE – 1 UN PRINTEMPS A PARIS

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

UNITE – 2

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

PHONETIQUE : Intonation, liaison, voyelles orales et nasales.

UNITE – 3

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

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

UNITE- 4 AVENTURE EN BOURGOGNE

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

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

UNITE – 5

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

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

UNITE – 6

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

In addition Passé Composé will be introduced in the Unit 2

Text Book : LE NOUVEAU SANS FRONTIERES – 1 (Text Book and
 (Unit 1 & Unit 2) **Exercise Book** published by CLE INTERNATINAL – Philippe
 Dominique et al.

SCHEME OF EXAMINATION:

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

Final Written Examination: Grammar, Communication & Translation 70marks
Written Examination - 50 marks Viva voce -20 marks

Open Elective - I
Basic German language
(Common to all branches)

Code: 101FL03

DRAFT

L	T	P/D	C
2	2	-	2

DEUTSCH FUR ANFANGER (German for beginners)

Syllabus

1. OBJECTIVE: To introduce the learners to basic German and to acquaint them with German culture. The learners should be able to express themselves in simple sentences on a few day-to-day situations.

2. DURATION: I-Semester

3. CLASSROOM STRENGTH: preferably not exceeding 30

4. MODE: Face-to-Face classroom interaction

5. TEACHING HOUSE: 2 HOURS and 2 TUTORIALS / WEEK

6. COURSE CONTENT:

Unit 1

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

Unit 2

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

Unit 3

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

Unit 4

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

Unit 5

- Pretaritim of sein and haben
- Perfect tense

Unit 6

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

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

Text book to be recommended out of the following.

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

9. SCHEME OF THE EXAMINATION:

Duration of written papers: 3 hours each

Paper 1 :Grammar and Translation (German > English and vice versa)	100 marks
Paper II: Reading comprehension, letter writing / short easay.	100 marks
Paper III: Viva voce	100 marks

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

Open elective -1
TECHNOLOGY of MANAGEMENT
(101MB52)

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:

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

References

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

**Opeen elective-I
ENTREPRENEURSHIP (101MB55)**

The objective of the course is to make students understand the nature of entrepreneurship, and its importance to business.

UNIT I

NATURE OF ENTREPRENEURSHIP: Definition of entrepreneurship, Evolution of entrepreneurship Concept Categories of Entrepreneurship, Entrepreneurial Propensity, Entrepreneurial potential, Entrepreneurial Orientation, Schools of thought on Entrepreneurship, Essential features of Entrepreneurship, attitude and leadership of Entrepreneur, Characteristics of entrepreneur, Qualities and skills, functions of entrepreneur

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

ASPECTS OF PROMOTION: Opportunity Analysis, SWOT Analysis, Internal and External Environment Analysis, Technological Competitiveness, Entrepreneurs and legal regulatory systems.

UNIT IV

PROJECT PLANNING AND FEASIBILITY STUDIES: The Concept of Project, Project Life Cycle, Project Planning, Feasibility, SWOT Analysis, Product and Process Development, Major steps in product development.

UNIT V

FINANCIAL ASPECTS OF THE ENTREPRENEURSHIP: Source of Capital, Debt-Equity Financing Commercial Banks, Bank Loans, Assessment of Benefits and Costs, Informal Agencies In financing entrepreneurs, Government Grants and Subsidies, Types of Investors and Private Offerings. Entrepreneurial Strategy: Generation of new entry opportunity, Decisions under Uncertainty, entry strategy, new entry exploitation, environmental instability and First-Mover disadvantages, Risk Reduction strategies, Market scope strategy, Imitation strategies and Managing Newness, Marketing strategies for start-ups, Operational complexities in start-ups

UNIT VI

WOMEN ENTREPRENEURSHIP: Introduction, Problems faced by Women Entrepreneurs in India, Strategies to overcome obstacles faced by women entrepreneurs. The dynamic need, entrepreneurship in a Developing economy, the scope of entrepreneurship among women, promotional efforts supporting women entrepreneurs in India, Issues of employment generation.

References:

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

Syllabus for B. Tech. III Year I semester
Open elective-I
Web Technologies

	L	T	P/D	C
Code: 101IT09	4	1	-	4

UNIT-I: Introduction to HTML, XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX.

UNIT-II: Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

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

UNIT-IV: Web Servers and Servlets: Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat, Introduction to Servlets: Lifecycle of a Servlet, JSDK, The Servlet API, The javax.servelet Package, Reading Servlet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues.

UNIT-V: Introduction to JSP: The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing: JSP Application Design with MVC Setting Up and JSP Environment, JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects.

UNIT-VI: Database Access: Database Programming using JDBC, Studying Javax.sql.* package, Accessing a Database from a JSP Page, Application – Specific Database Actions, Introduction to struts framework.

TEXT BOOKS:

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech (UNIT s 1,2)
2. PHP-Wrox Publications(UNIT s 3)
3. Java Server Pages –Hans Bergsten, SPD O’Reilly (UNITs 4,5,6)

REFERENCE BOOKS:

1. Programming world wide web-Sebesta,Pearson
2. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson
3. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
4. Jakarta Struts Cookbook , Bill Siggelkow, S P D O’Reilly for chap 8.
5. Murach’s beginning JAVA JDK 5, Murach, SPD
6. An Introduction to web Design and Programming –Wang-Thomson
7. Web Applications Technologies Concepts-Knuckles,John Wiley
8. Programming world wide web-Sebesta,Pearson
9. Web Warrior Guide to Web Programmimg-Bai/Ekedaw-Thomas
10. Beginning Web Programming-Jon Duckett WROX.
11. Java Server Pages, Pekowsky, Pearson.

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
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III Year – I Semester

**L T P C
3 1 0 3**

(101EC13) LINEAR AND DIGITAL IC APPLICATIONS

UNIT-I-OP-AMPS:

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

UNIT-II-APPLICATIONS OF OP- AMPS:

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

NON-LINEAR APPLICATIONS OF OP- AMPS: Non- Linear function generation, Comparators, Multi vibrators, Triangular and Square wave generators, Log and Anti log amplifiers, Precision rectifiers.

UNIT-III-OSCILLATORS:

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

TIMERS & PHASE LOCKED LOOPS: Introduction to 555 timer, functional diagram, Monostable and Astable operations and applications, Schmitt Trigger. Phase Locked Loop.

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

Introduction, basic DAC techniques, weighted resistor DAC, R-2R ladder DAC, inverted R-2R DAC, and IC 1408 DAC, Different types of ADCs - parallel comparator type ADC, counter type ADC, successive approximation ADC and dual slope ADC. DAC and ADC Specifications, Specifications AD 574 (12 bit ADC).

UNIT-V-LOGIC FAMILIES:

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

UNIT-VI-MEMORIES: ROMs:

Internal structure, 2D-decoding commercial types, timing and applications. Static RAM: Internal structure, SRAM timing, standard SRAMS, synchronous SRAMS. Dynamic RAM: Internal structure, timing, synchronous DRAMs.

TEXT BOOKS :

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

REFERENCES :

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

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
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HUMAN VALUES, ETHICS AND IPR

Code:101BT37

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2	-	-	2

UNIT -I:

A: INDIAN CULTURE- HUMAN VALUES AND VALUE EDUCATION:

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

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

UNIT- II:

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

UNIT -III:

C: HUMAN VALUES AND ETHICS:

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

UNIT -IV:

D:RELEVANCE OF ANCIENTS WISDOM AND PRACTICES FOR PROFESSIONALS IN MODERN AGE:

Problems of Modernity and impact on modern life (self, family and society). Problems of freedom in Individual centric vs family centric social structure. Health issues related to Individual freedom, competition and professional life. Relevance of Indian wisdom on individual, family and social life. Relevance of yogic and spiritual practices in modern times

for intellect-mind-body harmony. Science and religion, concentration and meditation, peace of mind, Hinduism in view of Mahatma Gandhi, Role of expansion of Technology in Third Millennium. Indian literature and cultural identity, Teacher- Student relationship. Need for balance and harmonious growth in all stages of life and Development into holistic professional.

UNIT- V

E: INTELLECTUAL PROPERTY RIGHTS (IPR)

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

UNIT-VI

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

TEXT BOOKS

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

REFERENCES:

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

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
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III Year – I Semester

**L T P C
4 1 0 4**

(101EC14) ANTENNA AND WAVE PROPOGATION

UNIT I

Introduction, Radiation Mechanism – single wire, 2 wire, dipoles, Current Distribution on a thin wire antenna. Antenna Parameters] - Radiation Patterns, Main Lobe and Side Lobes, Beamwidths, Beam Area, Radiation Intensity, Beam Efficiency, Directivity, Gain and Resolution, Antenna Apertures, Aperture Efficiency, Effective Height. Related Problems.

UNIT II

Retarded Potentials, Radiation from Small Electric Dipole, Quarterwave Monopole and Halfwave Dipole – Current Distributions, Evaluation of Field Components, Power Radiated, Radiation Resistance, Beamwidths, Directivity, Effective Area and Effective Height. Natural current distributions, fields and patterns of Thin Linear Center-fed Antennas of different lengths, Radiation Resistance.

UNIT III

2 element arrays – different cases, Principle of Pattern Multiplication, N element Uniform Linear Arrays – Broadside, Endfire Arrays, EFA with Increased Directivity, Derivation of their characteristics and comparison. Directivity Relations (no derivations). Related Problems. Binomial Arrays, Effects of Uniform and Non-uniform Amplitude Distributions, Design Relations.

UNIT IV

Introduction, Travelling wave radiators – basic concepts, Longwire antennas – field strength calculations and patterns, V-antennas, Rhombic Antennas and Design Relations, Broadband Antennas: Helical Antennas – Significance, Geometry, basic properties, Axial Mode and Normal Modes (Qualitative Treatment). Yagi - Uda Arrays, Folded Dipoles & their characteristics

UNIT V

Flat Sheet and Corner Reflectors. Paraboloidal Reflectors – Geometry, characteristics, types of feeds, F/D Ratio, Spill Over, Back Lobes, Aperture Blocking, Off-set Feeds, Cassegrainian Feeds. Horn Antennas – Types, Optimum Horns, Design Characteristics of Pyramidal Horns. Microstripline and its propagation properties, Inverted Microstrip and suspended stripline.

UNIT VI

Concepts of Propagation – frequency ranges and types of propagations. Ground Wave Propagation. Sky Wave Propagation – Formation of Ionospheric Layers and their Characteristics, Mechanism of Reflection and Refraction, Critical Frequency, MUF & Skip Distance, Virtual Height, Ionospheric Abnormalities, Ionospheric Absorption. Space Wave Propagation, Tropospheric Wave Propagation and M-curves and Duct Propagation.

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.

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III Year – I Semester

**L T P C
4 1 0 4**

(101EC15) DIGITAL SIGNAL PROCESSING

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.

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.

UNIT VI

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

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.

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

III Year I Semester

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LOGICAL REASONING - I**UNIT I**

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

UNIT II

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

UNIT III

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

UNIT IV

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

UNIT V

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

UNIT VI

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

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

III Year – I Semester

L T P C
0 0 3 2

(101EC73) LINEAR AND DIGITAL IC APPLICATIONS LAB

Part A (IC Application Lab):

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

Part B (Digital IC Applications Lab):

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

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

Equipment required for Laboratories:

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

For Software Simulation

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

III Year – I Semester**L T P C**
0 0 3 2**(101EC75) DIGITAL SIGNAL PROCESSING LAB****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 – I Semester

L T P C
0 0 3 2

(101EC74) ANALOG COMMUNICATION LAB

1. AM generation and detection
2. Simple and delayed AGC characteristics
3. DSB/SC generation and Detection
- 4 SSBSC Modulations and Demodulation
5. Implementation of intermediate frequency amplifier
6. FM generation and detection
7. PLL characteristics and FM demodulation using PLL
8. Receiver Characteristics
9. Spectrum Analyzer
10. Sampling Theorem Verification
11. Pulse Amplitude Modulation & Demodulation
12. Pulse Position Modulation & Demodulation

III Year – II Semester

L	T	P/D	C
3	1	-	3

(101EM05) MICROPROCESSORS AND MICROCONTROLLERS**UNIT - I**

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

UNIT - II

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

UNIT - III

8255 PPI – various modes of operation and interfacing to 8086. Interfacing Keyboard, Displays, Stepper Motor and actuators. D/A and A/D converter interfacing. Interrupt structure of 8086. Vector interrupt table. Interrupt service routines. Introduction to DOS and BIOS interrupts. 8259 PIC Architecture and interfacing cascading of interrupt controller and its importance.

UNIT - IV

The 8051 Architecture : Introduction, 8051 Micro controller Hardware, Input/Output Ports and Circuits, External Memory, Counter and Timers, Serial data Input/Output, Interrupts.

UNIT - V

Basic Assembly Language Programming Concepts : The Assembly Language programming Process, Programming Tools and Techniques, Programming the 8051, Data Transfer and Logical Instructions. Arithmetic Operations, Decimal Arithmetic. Jump and Call Instructions, Further Details on Interrupts.

UNIT - VI

Applications : Interfacing with Keyboards, Displays, D/A and A/D Conversions, Multiple Interrupts. Serial Data Communication. 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.

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 – II Semester

L	T	P/D	C
3	1	-	3

(101EM07) VLSI DESIGN

Unit-I

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

Unit-II

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

Unit-III

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

Unit-IV

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

Unit-V

CMOS sequential logic circuits: static latches and registers, dynamic latches and registers

Data path Design: memory, control logic, system consideration, adders, multipliers, shifters, high density memory elements.

Unit-VI

Digital system design implementation options: ASICs, PLDs, CPLDs, FPGAs.

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

TEXT BOOKS:

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

REFERENCES:

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

III Year – II Semester

L T P C
2 2

Code: 121MA71

QUANTITATIVE APTITUDE
 (Common to All Branches)

Unit I

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

Unit II

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

Unit III

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

Unit IV

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

Unit V

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

Unit VI

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

Text Books:

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

III Year – II Semester**BANKING OPERATIONS, INSURANCE AND RISK MANAGEMENT
(Common to all branches) OPEN ELECTIVE -II**

Code: 101MB56	L	T	P/D	C
	3	-	-	3

**UNIT I:
INTRODUCTION TO BANKING BUSINESS:**

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

**UNIT II:
BANKING REFORMS AND REGULATION:**

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

**UNIT III:
INSURANCE:**

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

**UNIT IV:
INSURANCE BUSINESS ENVIRONMENT:**

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

**UNIT V:
INTRODUCTION TO RISK**

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

**UNIT VI:
INSURANCE AS A RISK MANAGEMENT**

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

TEXT BOOKS

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

REFERENCES:

- Scott E. Harringam Gregory R. Nichaus: Risk Management & Insurance, , TMH, 2009.
- George E. Rejda: Principles of risk Management & Insurance, , 9/e, Pearson Education, 2009.
- G.Koteshwar: Risk Management Insurance and Derivatives, Himalaya, 2008
- Gulati: Principles of Insurance Management, Excel, 2009
- James S Trieschmann, Robert E. Hoyt & David N. Sommer: Risk Management & 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

III Year – II Semester**NEURAL NETWORKS FUZZY LOGIC
(Common to all branches) OPEN ELECTIVE -II**

Code: 101IT10	L	T	P/D	C
	3	1	-	3

UNIT - I

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

UNIT - II**Feedforward Neural Networks:**

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

UNIT - III**Feedback Neural Networks**

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

UNIT – IV**From Classical Sets to Fuzzy Sets: A Grand Paradigm Shift:**

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

Fuzzy Sets Vs Crisp Sets:

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

UNIT – V

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

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

UNIT-VI

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

TEXT BOOKS

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

REFERENCES :

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

QUALITY AND RELIABILITY ENGINEERING (101EC35)

III Year – II Semester

L T P C
3 - - 3

UNIT-I. Introduction:

Definition of reliability, quality, availability, maintainability, types of failures, various parameters of system effectiveness, concept of failure modes, difference between MTTR and MTTF.

UNIT-II. Reliability Data Analysis:

The reliability function, bathtub curve, data collection, storage & recovery of data, component reliability from test data, linear hazard model & exponential hazard model. System Reliability: Systems with components in series, systems with components in parallel, series –parallel systems, Fault tree techniques, K-out of m systems.

UNIT-III. Electronics System Reliability:

Reliability of electronic components, component types and failure mechanics, circuit and system aspects, reliability of electronic system design, parameter variation and tolerance.

UNIT-IV. Quality management system & TQC:

Quality policy, cost & quality, concept of TQM, management of reliability & quality, elements of quality systems, essential steps in implementing quality system for ISO: 9000.

UNIT-V: Computer and Internet reliability:

Introduction, Computer System failure causes and reliability measures, Comparison Between hardware and Software reliability, Fault masking, Computer System Lifecycle Costing, Software Reliability Evaluation Models, Internet reliability, Failure Examples, Outage Categories, An approach for Automating Fault detection in Internet services, Internet Reliability Models.

UNIT-VI: Software Quality:

Introduction, Software Quality Terms and Definitions, Software Quality Factors and their Sub-factors, Useful Quality tools for use During the Software development Process, A managers Guide to Total Quality Software Design, Software Quality Metrics, Software Quality Cost.

Text / Referencebook:

1. Practical Reliability Engineering/ Patrick D.T., O'Connor / John Wiley & Sons 4th edition).
2. Reliability Engineering/ E. Balagurusamy / Tata McGraw- Hill.
3. Quality control & Total quality Management / P.L.Jain / Tata McGraw- Hill.
4. Reliability and Maintainability Engineering / Charles E. Ebeling / TMH
5. Applies Reliability and Quality fundamentalsn methods and procedures: Dhillon B.S.
6. Reliability Engineering By Govil, 1992
7. Reliability Engineering By Dr. A.K. Agrawal, 1992

III Year – II Semester

L T P C

101MA92

COMPREHENSIVE VIVA VOCE-II

III Year – II Semester

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4	1	0	4

(101EC17) DIGITAL COMMUNICATIONS**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.

UNIT II

Digital Modulation Techniques: Introduction, 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, calculation of error probability of ASK, BPSK, BFSK, QPSK, Definition of BER.

UNIT III

Baseband Transmission and Optimal Reception of Digital Signal: Pulse shaping for optimum transmissions, Base band signal receiver, matched filter, probability of error using matched filter, optimal of coherent reception, eye diagrams, ISI, equalizer, scrambling and descrambling.

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, PN-sequences: Generation and Characteristics.

TEXT BOOKS :

1. Modern Analog and Digital Communication, 3rd Ed., B. P. Lathi, Oxford University Press
2. Digital and Analog Communication Systems, K. Sam Shanmugham, John Wiley & Sons
3. Principles of Communication Systems – H. Taub and D. Schilling, TMH, 2003

REFERENCES :

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

III Year – II Semester**L T P C
3 1 0 3****(101EC22) TELECOMMUNICATION SWITCHING SYSTEMS AND NETWORKS
(PROFESSIONAL ELECTIVE- I)****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.

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; Outband Signaling; Inband 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: 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.

TEXT BOOKS :

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

REFERENCES :

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

III Year – II Semester

L T P C
3 1 0 3**(101EC23) SATELLITE COMMUNICATIONS
(PROFESSIONAL ELECTIVE – I)****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 links, up link design, Design of satellite links for specified C/N,. System design example.

UNIT IV

MULTIPLE ACCESS: Frequency division multiple access (FDMA) Intermodulation, 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.

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, Operational NGSO constellation Designs. DBS (Direct broadcast services) fundamentals

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.Suyderhoud, 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, 1996.

III Year – II Semester

L T P C
3 1 0 3

(101EC24) DIGITAL DESIGN THROUGH VERILOG HDL
(PROFESSIONAL ELECTIVE – I)

UNIT I

INTRODUCTION TO VERILOG HDL: Verilog as HDL, Levels of Design Description, Concurrency, Simulation and Synthesis, Functional Verification, System Tasks, Programming Language Interface (PLI), Module, Simulation and Synthesis Tools

LANGUAGE CONSTRUCTS AND CONVENTIONS : Introduction, Keywords, Identifiers, White Space Characters, Comments, Numbers, Strings, Logic Values, Strengths, Data Types, Scalars and Vectors, Parameters, Operators.

UNIT II

GATE LEVEL MODELING : Introduction, AND Gate Primitive, Module Structure, Other Gate Primitives, Illustrative Examples, Tri-State Gates, Array of Instances of Primitives, Additional Examples, Design of Flipflops with Gate Primitives, Delays, Strengths and Contention Resolution, Net Types, Design of Basic Circuits.

BEHAVIORAL MODELING : Introduction, Operations and Assignments, Functional Bifurcation, Initial Construct, Always Construct, Assignments with Delays, Wait construct, Multiple Always Blocks. Designs at Behavioral Level, Blocking and Non blocking Assignments. The case statement, *if* and *if-else* constructs, assign-deassign construct, repeat construct, for loop, the disable construct, while loop, forever loop, parallel blocks, force-release construct, Event

UNIT III

MODELING AT DATA FLOW LEVEL: Introduction, Continuous Assignment Structures, Delays and Continuous Assignments, Assignment to Vectors, Operators.

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.

UNIT IV

SYSTEM TASKS, FUNCTIONS, AND COMPILER DIRECTIVES: Parameters, Path Delays, Module Parameters, System Tasks and Functions, File-Based Tasks and Functions, Compiler Directives, Hierarchical Access, User- Defined Primitives (UDP).

UNIT V

Sequential circuit description: Sequential models – feedback model, capacitive model, implicit model, basic memory components, functional register, static machine coding, sequential synthesis.

UNIT VI

Component Test and Verification: Test bench – combinational circuit testing, sequential circuit testing, test bench techniques, design verification, assertion verification.

TEXT BOOKS:

1. T.R. Padmanabhan and B. Bala Tripura Sundari, Design Through Verilog HDL, Wiley, 2009.
2. Zainalabdien Navabi, Verilog Digital System Design, TMI, 2nd Edition.

REFERENCES:

1. Fundamentals of Logic Design with Verilog – Stephen. Brown and Zvonko Vranesic, TMH, 2nd Edition, 2010.
2. Digital Logic Design using Verilog, State machine and synthesis for FPGA, Sunggu Lee, Cengage Learning, 2009.
3. Verilog HDL – Samir Palnitkar, 2nd Edition, Pearson Education,, 2009
4. Advanced Digital Design with Verilog HDL – Michael D. Ciletti, PHI, 2009.

**OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(101CS03)**

L	T	P/D	C
3	1	-	3

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 costing, arrays, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, recursion, string handling.

UNIT-II

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

UNIT-III

Interfaces :definition, variables and methods in interfaces , differences between classes and interfaces, usage implements and extends keyword, an application using interfaces, uses of interfaces. Packages: Definition, types of packages, Creating and importing a user defined package

UNIT-IV

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

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

UNIT-V

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

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

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

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

UNIT-VI

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

TEXT BOOKS

1. Java; the complete reference, 6th editon, Herbert schildt, TMH.
2. Introduction to Java programming 6th edition, Y. Daniel Liang, pearson education.

REFERENCES

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

III Year – II Semester

L	T	P/D	C
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(101EM71) MICROPROCESSORS AND MICROCONTROLLERS LAB**LIST OF PROGRAMS****Introduction to MASM/TASM, KIEL Assemblers****Familiarization with 8086, 8051 Kits****Experiment I, II****Write ALP and execute the program to**

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

Experiment III**Write ALP and execute the program to**

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

Experiment IV

Write ALP and execute the program to

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

Experiment V

Write ALP and execute the program to

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

Experiment VI

Write ALP and execute the program to

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

Experiment VII

Write ALP and execute the program to

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

Experiment VIII

Write ALP and execute the program to

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

Experiment IX

Write ALP and execute the program to

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

Experiment X

Write ALP and execute the program to

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

Experiment XI

Write ALP and execute the program to

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

Experiment XII

Write ALP and execute the program to

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

Experiment XIII

Write ALP and execute the program to

52. Interface a keyboard
 Interface seven segment display

III Year – II Semester

L	T	P/D	C
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(101EM73) VLSI LAB (VHDL & VERILOG)

Design, Simulation and layout of basic digital blocks

Tools to be used: TANNER, MAGMA, CADENCE, MAGIC, SPICE

Part-A

1. Implement combinational digital blocks using FPGA.
2. Implement Sequential digital blocks using FPGA.
3. Design, simulate, verify and synthesize FSM using VHDL/Verilog.
4. Design, simulate, verify and synthesize '0' to '1' string recognizer using VHDL/Verilog.
5. Debug and identify signal flow for digital blocks using 'CHIPSCOPE-PRO'

Part-B

1. Draw Layout diagrams of all fundamental gates.
2. Draw Layout diagrams for combinational digital blocks.
3. Verify p-MOSFET, n-MOSFET Transistor voltage transfer characteristics and Draw Layout diagrams.
4. Verify p-MOS, n-MOS and CMOS INVERTER Transistor voltage transfer characteristics and Draw their Layout diagrams.
5. Perform Power and Timing analysis on p-MOSFET, n-MOSFET.

Part-C

Design Project

III Year – II Semester

L T P C
0 0 3 2

(101EC80) DIGITAL COMMUNICATION LAB

1. Pulse Amplitude Modulation and demodulation.
2. Pulse Width Modulation and demodulation.
3. Pulse Position Modulation and demodulation.
4. Sampling Theorem – verification.
5. Time division multiplexing.
6. Pulse code modulation.
7. Differential pulse code modulation.
8. Delta modulation.
9. Frequency shift keying.
10. Phase shift keying .
11. Differential phase shift keying.

MANAGEMENT SCIENCE (101MB02)**IV Year I Semester**

L	T	P/D	C
3	1	-	3

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 Management 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:

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.

UNIT V:

MARKETING MANAGEMENT: Concept of Marketing, Functions, Marketing Mix, Product Life Cycle, Marketing Strategies, Channels of Distribution, Differences between products and services.

UNIT VI:

STRATEGIC MANAGEMENT: Concepts in Strategic Management, Vision, Mission, Objectives, SWOT Analysis, Concept of Strategic Planning, Competitive Advantage, Concept of Core Competence.

REFERENCES:

1. LM Prasad: Principles and Practices of Management, Sultan Chand & Sons
2. Aswathappa: Production & Operations Management
3. Koontz & Weihrich: Essentials of Management, 6/e, TMH, 2005
4. Memoria & S.V. Gadker, Personnel Management, Himalaya, 25/e, 2005
5. Kotler Philip & Keller Kevin Lane: Market Management 12/e, PHI, 2005
6. Strategic Management, Text and Cases, VSP Rao, V Hari Krishna
7. L.S. Srinath: PERT/CPM, Affiliated East-West Press, 2005.
8. Schermerhom, Capling, Poole & Wiesner. Management, Wiley, 2002
9. Pamell: Strategic Management, Biztantra, 2003
10. Thomas N Duening & John M. Ivancevich Management – Principles and Guidelines, Biztantra, 2003.

LINEAR CONTROL SYSTEMS (101EC19)**IV Year I Semester**

L	T	P/D	C
3	1	-	3

UNIT – I INTRODUCTION:

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

Transfer function representation:

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

UNIT-II TIME RESPONSE ANALYSIS:

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

UNIT – III STABILITY ANALYSIS IN S-DOMAIN :

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

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

UNIT – IV FREQUENCY RESPONSE ANALYSIS:

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

UNIT – V STABILITY ANALYSIS IN FREQUENCY DOMAIN :

Polar Plots-Nyquist Plots-Stability Analysis.

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

UNIT – VI STATE SPACE ANALYSIS OF CONTINUOUS SYSTEMS:

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

TEXT BOOKS:

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

REFERENCES:

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

IV Year – I Semester

L T P C
3 1 0 3**(101EC20) MICROWAVE ENGINEERING****UNIT I**

MICROWAVE TRANSMISSION LINES: Introduction, Microwave Spectrum and Bands, Applications of Microwaves. Rectangular Waveguides – TE/TM mode, Cut-off Frequencies considerations, Dominant Modes, Mode Characteristics – Phase and Group Velocities, Wavelengths and Impedance Relations; dominant and evanescent modes; Power Transmission and Power Losses in Rectangular Guide, **CIRCULAR WAVEGUIDES:** Introduction, Nature of Fields, Characteristic Equation, Dominant and Degenerate Modes. Cavity Resonators– Introduction, Rectangular and Cylindrical Cavities, Dominant Modes and Resonant Frequencies, Q factor and Coupling Coefficients. Related Problems.

Microstrip Lines– Introduction, Zo Relations, Losses, Q factor. Related Problems.

UNIT II

MICRO STRIP LINES, WAVEGUIDE COMPONENTS AND APPLICATIONS: Introduction to micro strip lines, Zo relations, losses, Q factor, related problems; Coupling Mechanisms – Probe, Loop, Aperture types. Waveguide Discontinuities – Waveguide irises, Tuning Screws and Posts. Matched Loads, 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, Circulator and Isolator. Related Problems.

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

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. Expressions for O/P Power and Efficiency. Reflex Klystrons – Structure, Applegate Diagram and Principle of working, Mathematical Theory of Bunching, Power Output, Efficiency, Electronic Admittance; Oscillating Modes and o/p Characteristics, Electronic and Mechanical Tuning. Related Problems.

UNIT-IV

HELIX TWTS: 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.

UNIT V

MICROWAVE SOLID STATE DEVICES: Introduction, Classification, Applications. GaAs FET Devices and amplifiers. Mixers and Detectors. Noise figure and noise temperature considerations. TEDs – Introduction, Gunn Diode – Principle, Characteristics, Basic Modes of Operation, Oscillation Modes. Avalanche Transit Time

Devices –Introduction, IMPATT Diodes, PIN Diodes, Varactor Diodes,Schottky Diodes – Principle of Operation and Characteristics.

UNIT-VI

MICROWAVE MEASUREMENTS: **description of** measurement setups. Microwave Bench and measurement Precautions; Microwave Power Measurement – Bolometer Method. Measurement of Attenuation, Frequency, VSWR, and Cavity Q. unknown 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 Passive Circuits – Peter A. Rizzi, PHI, 1999.
4. Electronic and Radio Engineering – F.E. Terman, McGraw-Hill, 4th ed., 1955.
5. Elements of Microwave Engineering – R. Chatterjee, Affiliated East-West Press Pvt. Ltd., New Delhi, 1988.
6. Micro Wave and Radar Engineering – M. Kulkarni, Umesh Publications, 1998.

COMPUTER NETWORKS (101CS05)

IV Year I Semester

L	T	P/D	C
3	1	-	3

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 – II Semester

L T P C
4 0 0 4**(101EC25) CELLULAR AND MOBILE COMMUNICATIONS****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

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.

TEXTBOOKS:

1. Mobile Cellular Telecommunications – W.C.Y. Lee, Tata McGraw Hill, 2nd Edn., 2006.
2. Principles of Mobile Communications – Gordon L. Stuber, Springer International 2nd Edition, 2007.

REFERENCES:

1. Wireless Communications - Theodore. S. Rappoport, Pearson education, 2nd Edn., 2002.
2. Wireless and Mobile Communications – Lee McGraw Hills, 3rd Edition, 2006.
3. Wireless Communication and Networking – Jon W. Mark and Weihua Zhqung, PHI, 2005.
4. Wireless Communication Technology – R. Blake, Thompson Asia Pvt. Ltd., 2004.

SERVICE COURSE FOR ECE
Computer Networks Lab

Code: 101CS91

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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 – I Semester

L T P C
3 1 0 3**(101EC26) OPTICAL COMMUNICATIONS
(PROFESSIONAL ELECTIVE – II)****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 AND 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

Source to fiber power launching - Output patterns, Power coupling, Power launching, Equilibrium Numerical Aperture, Laser diode to fiber coupling. Optical system design — Considerations, Component choice, Multiplexing. Point-to-point links, System considerations, Link power budget with examples. Rise time budget with examples.

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.

RERFERENCES:

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

IV Year – I Semester

L T P C
3 1 0 3**(101EM03) COMPUTER ORGANIZATION
(PROFESSIONAL ELECTIVE-II)****UNIT - I**

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

UNIT - II

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

UNIT - III

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

UNIT - IV

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

UNIT - V

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

UNIT - VI

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

TEXT BOOKS :

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

REFERENCES:

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

III Year – II Semester

L T P C
3 1 0 3

**(101EC70) Industrial Automation
(PROFESSIONAL ELECTIVE-II)**

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 multichannel 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, 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. Data Acquisition and Signal Processing for smart sensors. By Nikolay V. Kirian Kari, Sergey Y. Yurish, Shpak, Vadimp Daynega. Publishers John Wiley & Sons
2. Supervisory Control and Data Acquisition by Stuart A. Boyer.

Reference:

Anirudha Datta, Ming- Tzu Ho and Shankar P. Bhattacharya

**(101EC23) SATELLITE COMMUNICATIONS
(PROFESSIONAL ELECTIVE – II)**

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 links, up link design, Design of satellite links for specified C/N,. System design example.

UNIT IV

MULTIPLE ACCESS: Frequency division multiple access (FDMA) Intermodulation, 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.

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, Operational NGSO constellation Designs. DBS(Direct broadcast services) fundamentals

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 Allnutt, WSE, Wiley Publications, 2nd Edition, 2003.
2. Satellite Communications Engineering – Wilbur L. Pritchard, Robert A Nelson and Henri G. Suyderhoud, 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, 1996.

**Syllabus for B. Tech. IV Year I semester
Information Technology
Logical Reasoning - II
(Common to all branches)**

Code: 101MA73	L	T	P/D	C
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Unit – I

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

Unit – II

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

Unit – III

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

Unit – IV

Cubes and Dice – Analytical Reasoning

Unit – V

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

Unit – VI

Clocks & Calendar.

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

IV Year – I Semester

L T P C
4 0 0 4(101 EM 06) **EMBEDDED AND REAL TIME SYSTEMS**
(PROFESSIONAL ELECTIVE-II)

UNIT-I: Introduction: Embedded Systems Overview, Design Challenge, Processor Technology, IC Technology, Trade-Offs. Single Purpose Processor RT-Level Combinational Logic. Sequential Logic (RT-Level), Custom Single Purpose Processor Design (RT-Level), Optimizing Custom Single Purpose Processors

UNIT-II: General Purpose Processors: Basic Architecture, Operation, Pipelining, Programmers View, Development Environment, Application Specific Instruction-Set Processors (Asips)-Microcontrollers And Digital Signal Processors.

UNIT-III: State Machines And Concurrent Process Models: Introduction, Models, Languages, Finite State Machines With Data Model (FSMD), Using State Machines, Program State Machine Model (PSM). Concurrent Process Model, Concurrent Processes, Communication Among Processes, Synchronization Among Process, Implementation, Data Flow Model, Real Time Systems.

UNIT-IV: Design Technology: Introduction, Automationsynthesis, Parallel Evolution Of Compilation And Synthesis, Logic Synthesis, RT Synthesis, Behavioral Synthesis, Systems Synthesis And Hardware/Software Co-Design, Verification, Hardware/Software Co-Simulation, Reuse Of Intellectual Property Codes.

UNIT-V: Introduction to Real Time Systems: Tasks and Tasks States, Tasks and Data, Semaphores, and Shared Data; Message Queues, Mail Boxes and Pipes, Timer Functions, Events, Memory Management, Interrupt Routines In and RTOS Environment.

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 Like Uc-OS (Open Source); Embedded Software Development Tools: Host And target Machines, Linker/Locators For Embedded Software, Getting Embedded Software Into The Target System; Debugging Techniques: Testing On Host Machine, Using Laboratory Tools, An Example System.

Text Books:

1. Embedded System Design-A Unifies Hardware/Software Introduction-Frank Vahind, Tony D. Givargis, John Wiley, 2002.
2. Computers And Components, Wayne Wolf, Elsevier.
3. Embedded System Building Blocks, Labrosse, Viacmp Publishers.

References:

1. Embedded Systems, Raj Kamal, TMH.
2. An Embedded Software Primer, David E. Simon, Pearson Education.
3. Embedded/Real Time Systems-KVKK Prasad Dreamtech Press ED, 2005

IV Year I Semester

L	T	P	C
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PRE-PROJECT SEMINAR (101EC93)

As Required

IV Year I Semester

L	T	P	C
0	0	0	2

**INDUSTRY ORIENTED MINI PROJECT EVALUATION
(101EC94)**

As Required

IV Year – I Semester

L T P C
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(101EC82) MICROWAVE AND OPTICAL COMMUNICATION LAB

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):

10. Characterization of LED.
11. Characterization of Laser Diode.
12. Intensity modulation of Laser output through an optical fiber.
13. Measurement of Data rate for Digital Optical link.
14. Measurement of NA.
15. Measurement of losses for Analog Optical link.

IV Year – II Semester

L T P C
4 0 0 4**(101EC27) WIRELESS COMMUNICATION AND NETWORKS
(PROFESSIONAL ELECTIVE-III)**

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 : Cellular system design fundamentals: Spectrum allocation, Basic cellular system, frequency reuse, channel assignment strategies, Hand off strategies, Interference and system capacity, Trunking and Grade off service, Improving coverage and capacity, cell splitting.

UNIT-III : 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- IV: 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- V: 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.

UNIT- VI: 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.

Text Books:

1. “Wireless Communications and applications”, Theodore S. Rappaport, Pearson Education -2003.
2. Kaveh Pahlavan, Prashant Krishna Murthy, “Principles of Wireless networks”, Pearson Education , 2002.

Reference Books:

1. “Wireless Networks”, P.Nicopolitidis, M.S.Obaidat, G.I.Papadimitria, A.S. Pomportsis, 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 – II Semester

L T P C
4 0 0 4**Multimedia Communications****Code: 101EC28****UNIT-I**

Fundamental concepts in Text and Image: Multimedia and hypermedia, World Wide Web, overview of multimedia software tools. Graphics and image data representation graphics/image data types, file formats, Color in image and video: color science, color models in images, color models in video.

UNIT-II

Fundamental concepts in video and digital audio: Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.

UNIT-III

Multimedia data compression: Lossless compression algorithm: Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Compression algorithms: Quantization, Transform Coding, Wavelet-Based Coding, Embedded Zero tree of Wavelet Coefficients Set Partitioning in Hierarchical Trees (SPIHT).

UNIT-IV

The Internet: Introduction, IP data grams, Fragmentation and reassembly, IP addresses, ARP and RARP, Routing

Algorithms: Static routing, Link-state shortest-path-first routing, flooding, Broadcast routing, Multicast routing, ICMP, Network & Application QoS.

UNIT-V

Multimedia Applications: Interpersonal communications, Interactive applications over the Internet, Entertainment applications

Entertainment Networks: Introduction, HFC Networks, Satellite & Terrestrial Television Networks: Broadcast television principles, Digital television, Interactive services.

UNIT VI

The World Wide Web: Introduction, URLs & HTTP, HTML, Audio & Video, Java & JavaScript, Web operation.

TEXT BOOKS:

1. Fundamentals of Multimedia by Ze-Nian Li and Mark S. Drew PHI/Pearson Education.
2. Multimedia Communications by Fred Halsall 2005 Pearson Education

REFERENCE BOOKS:

1. Data Communications and Networking by Behrouz A. Forouzan, 3rd ed, TMH.
2. Principles of Wireless Networks by Kaveh Pahalvan, Prashant Krishnamurthy, 3rd reprint, PHI.
3. Internetworking with TCP/IP by Douglas E. Comer, Volume 1, 5th ed, Pearson Education.
4. High-Speed Networks and Internets by William Stallings, 2nd ed, Pearson Education.

IV Year – II Semester

L T P C
4 0 0 4

**(101EC29) IMAGE & SPEECH PROCESSING
(PROFESSIONAL ELECTIVE-III)**

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, Slant transform, Hotelling transform.

UNIT II

Image enhancement Point processing. Histogram processing. Spatial filtering. Enhancement in frequency domain, Image smoothing, Image sharpening.

UNIT III

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, Source encoder and decoder, Error free compression, Lossy compression.

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 MAT LAB – Rafael C. Gonzalez, Richard E Woods and Steven L. Edition, PEA, 2004.
3. Digital Image Processing – William K. Pratt, John Wiley, 3rd Edition, 2004.
4. Fundamentals of Electronic Image Processing – Weeks Jr., SPIC/IEEE Series, PHI.

IV Year – II Semester

L T P C
4 0 0 4**(101EC31) RADAR SYSTEMS
(PROFESSIONAL ELECTIVE-III)****Unit-I**

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, Envelope detectors, integration of Radar pulses, RCS of targets, CW Radar. Doppler Effect. PRF and range ambiguities. System losses. Applications of CW Radar. Rx bandwidth requirements. FM CW Radar. FM CW Altimeter. Block diagram and characteristics.

Unit-III

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-IV

Tracking Radars: Sequential, Conical & 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 - V

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.

UNIT - VI

EW concepts: Jamming Techniques, Noise jamming: Barrage and spot noise jamming, **Deceptive jamming:** Range gate stealing and velocity gate stealing, Basic Principles of anti jamming methods, ECCM. Jamming margin derivation.

TEXT BOOKS:

1. Introduction to Radar Systems – Merrill I. Skolnik, SECOND EDITION, McGraw-Hill, 1981.
2. Introduction to Electronic warfare-- Shleher

REFERENCES:

1. Handbook of Radar Systems – Merrill I. Skolnik, THIRD EDITION, Tata McGraw-Hill, 2001.
2. RADAR foundation for imaging and advanced concepts – R.J Sullivan, PHI, 2004

IV Year – II Semester**Code:101CS07****OPERATING SYSTEMS**

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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.
Case studies: unix, linux and windows.

UNIT - III : Process-Synchronization & Deadlocks: Critical Section Problems, semaphores; methods for handling deadlocks-deadlock prevention, avoidance & detection; deadlock recovery.

UNIT - IV : Memory Management: Logical & Physical Address Space, swapping, contiguous memory allocation, non-contiguous memory allocation paging and segmentation techniques, segmentation with paging; virtual memory management - Demand Paging & Page-Replacement Algorithms; Demand Segmentation.
Case studies: unix, linux and windows.

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, Introduction to distributed file system.

UNIT - VI : I/O Systems: I/O Hardware, Application I/O Interface, Kernel, Transforming I/O requests, Performance Issues.
Protection and security: access control list, capabilities, third party tools.

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, T.M.H

IV Year I Semester

L T P C
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PROJECT (101EC95)

As Required

IV Year I Semester

L T P C
0 0 0 2

COMPREHENSIVE VIVA-VOCE - III
(101EC96)

As Required

IV Year I Semester

L T P C
0 0 0 2

TECHNICAL SEMINAR
(101EC97)

As Required