COURSE STRUCTURE
AND
DETAILED SYLLABUS

for

B.Tech Four Year Degree Course
(A-18 I & II year)

in

ELECTRONICS AND COMPUTER ENGINEERING
(ECM)

(Applicable for the batches admitted from 2018-2019)

SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY
(An Autonomous Institution approved by UGC and affiliated to JNTUH)
(Accredited by NAAC with 'A' Grade and Accredited by NBA of AICTE)
Yamnampet, Ghatkesar, Malkajigiri Medchal District -501 301.

ECM (A18 Regulation) CBCS Course Structure

B. Tech. I Year I Semester

S. No.	Course Category	Dept Course	Course Code	Name of the Course	L	T	P	C	Max. Marks	
									Int.	Ext.
1	BS	S&H	7HC03	Chemistry	3	1	0	4	30	70
2	ES	IT	7FC01	Problem Solving using C	3	0	0	3	30	70
3	BS	S&H	7HC07	Mathematics – I	3	1	0	4	30	70
4	ES	MECH	7BC01	Workshop/Manufacturing practices	1	0	0	1	30	70
5	HS	S&H	7HC01	English (Reading, Listening and Writing skills)	1	0	0	1	30	70
6	HS	S&H	7HC20	Human Values and Professional Ethics in Higher Education	3	0	0	0	30	70
									Grade Evaluation	
7	BS	S&H	7HC63	Chemistry Lab	0	0	3	1.5	30	70
8	ES	IT	7FC71	Problem Solving using C Lab	0	0	3	1.5	30	70
9	ES	MECH	7BC61	Workshop/Manufacturing practices Lab	0	0	3	1.5	30	70
10	HS	S&H	7HC61	English (Reading, Listening and Writing skills) Lab	0	0	2	1	30	70
11	PS	ECM	7D191	Technical Seminar - I	0	0	2	1	100	--
				Total	**11**	**2**	**13**	**19.5**	**400**	**700**

B. Tech. I Year II Semester

S. No.	Course Category	Dept Course	Course Code	Name of the Course	L	T	P	C	Max. Marks	
									Int.	Ext.
1	BS	S&H	7HC05	Engineering Physics	3	1	0	4	30	70
2	PC	EEE	7AC02	Network Analysis	3	0	0	3	30	70
3	BS	S&H	7HC09	Probability and Statistics	3	1	0	4	30	70
4	ES	MECH	7BC02	Engineering Graphics & Design	1	0	4	3	30	70
5	HS	S&H	7HC02	English (Oral communication skills)	1	0	0	1	30	70
6	BS	S&H	7HC65	Engineering Physics Lab	0	0	3	1.5	30	70
7	PC	EEE	7AC61	Electrical Circuits and Networks Analysis Lab	0	0	2	1	30	70
8	HS	S&H	7HC62	English (Oral communication skills) Lab	0	0	2	1	30	70
9	PS	ECM	7D292	Technical Seminar - II	0	0	2	1	100	--
				Total	**11**	**2**	**13**	**19.5**	**340**	**560**

B.Tech. II Year I Semester

S. No.	Course Category	Dept Course	Course Code	Subject	L	T	P/D	C	Max. Marks	
									Int.	Ext.
1.	PC	CSE	7EC01	Data Structures	2	1	0	3	30	70
2.	PC	ECM	7D301	Discrete Structure and Graph Theory	3	0	0	3	30	70
3.	PC	ECE	7C301	Electronic Devices and Circuits	3	0	0	3	30	70
4.	PC	ECE	7C302	Digital Logic Design	3	0	0	3	30	70
5.	PC	ECE	7C303	Signals and Systems	2	1	0	3	30	70
6.	HS	SMS	7ZC01	Management Science & Financial Accounting	2	0	0	2	30	70
7.	PC	CSE	7EC71	Data Structures (C, C++) Lab	0	0	3	1	30	70
8.	PC	ECE	7C371	Electronic Devices and Circuits Lab	0	0	2	1	30	70
9.	PC	IT	7FC74	IT Workshop	0	0	2	1	30	70
10.	PS	ECM	7D393	Technical Seminar – III	0	0	2	1	100	--
				Total :	**16**	**1**	**9**	**21**	**370**	**630**

B.Tech. II Year II Semester

S. No.	Course Category	Dept Course	Course Code	Subject	L	T	P/D	C	Max. Marks	
									Int.	Ext.
1	BS	S&H	7HC16	Mathematics – II (Differential Calculus)	2	0	0	2	30	70
2	PC	CSE	7EC02	Object Oriented Programming through Java	3	0	0	3	30	70
3	PC	ECM	7D403	Computer Organization and Operating Systems	3	0	0	3	30	70
4	PC	CSE	7EC03	Data Base Management Systems	3	0	0	3	30	70
5	PC	ECM	7D414	Software Engineering	2	0	0	2	30	70
6	PC	ECE	7C405	Analog Circuits	3	0	0	3	30	70
7	BS	S&H	7HC21	Environmental Science and Ecology	2	0	0	0	30	70
									Grade Evaluation	
8	PC	ECE	7C474	Analog Circuits Lab	0	0	2	1	30	70
9	PC	CSE	7EC73	Database Management Systems Lab	0	0	3	1.5	30	70
10	PC	CSE	7EC72	Object Oriented Programming through Java Lab	0	0	3	1.5	30	70
11	PS	ECM	7D494	Technical Seminar – IV	0	0	2	1	100	--
12	PC	ECM	7D481	Comprehensive Viva –Voce I	0	0	0	1	30	70
13	PS	ECM	7D584	Summer Industry Internship-I (Evaluation will be done along with 3-1 subjects)						
				Total :	**15**	**0**	**9**	**22**	**430**	**770**

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

Syllabus for B. Tech I Year I semester
Electronics and Computer Engineering
CHEMISTRY
(Common to all branches)

L	T	P/D	C
3	1	0	4

Code: 7HC03

Course Objectives:

- *To understand microscopic chemistry in terms of atomic and molecular orbitals*
- *To learn the preparation and applications of commercial and conducting polymers and lubricant materials*
- *To learn the industrial problems caused by water and municipal water treatment*
- *To acquire knowledge about different types of batteries and their working mechanism*
- *To develop the concepts and types of corrosion and the factors influence corrosion and to understand the control methods and protective coatings for metals*
- *To learn the chemical reactions of drugs that are used in the synthesis of drug molecules*

UNIT - I

Atomic and molecular structure (6L)

Molecular orbitals of diatomic molecules and plots of the multicentre orbitals. Equations for atomic and molecular orbitals. Energy level diagrams of diatomics. Pi-molecular orbitals of butadiene and benzene and aromaticity. Crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties. Band structure of solids and the role of doping on band structures.

UNIT - II

Engineering materials (8L)

Plastics – Thermosetting and Thermoplastics, preparation, properties and engineering applications of plastics: PVC, Teflon, Bakelite. **Fibers:** Nylon 6,6 and Dacron.

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

Lubricants - Definition, classification and function of lubricants, Types of lubrication and mechanisms – Thick Film or Hydrodynamic Lubrication, Thin Film or Boundary Lubrication, Extreme Pressure Lubrication. Classification and properties of lubricants – Viscosity, flash and fire point, cloud and pour point and acid value. **Engineering applications.**

UNIT - III

Water Technology (8L)

(a) **Introduction**:- Hardness of water – types of hardness (temporary and permanent), calculation of hardness- Numerical problems. Estimation of hardness of water by EDTA Method.

(b) **Water for Industrial purpose**: Food, sugar, textile, paper and pharma industries, water for steam making characteristics of boiler feed water, boiler troubles- scale and sludge & Carry over (priming &foaming),boiler corrosion, caustic embrittlement.

(c) **Water Treatment**: Internal conditioning- phosphate, carbonate & calgon conditioning. External Treatment: Ion-exchange process. Desalination-reverse osmosis. Municipal water treatment-sedimentation, coagulation, filtration, disinfection-chlorination, ozonization. **Engineering applications: Methodology and working of mineral water plant for drinking purpose.**

UNIT - IV

Electrochemistry (8L)

Conductance – conductors (metallic and electrolytic), types of conductance – specific, equivalent and molar conductance – effect of dilution on conductance.

Free energy and emf, cell potentials, electrode potential (oxidation and reduction). Types of electrodes - redox electrode (quinhydrode electrode), metal – metal insoluble salt electrode and Ion selective electrode. Cell notation and cell reaction –Nernst equation and applications. **Engineering Applications.**

Batteries : Types of batteries

(a) Primary batteries – Lechalanche cell (dry cell), Lithium cell

(b) Secondary batteries(Accumulators) – Lead acid battery, Lithium-ion battery

(c) Fuel cells- $H_2 – O_2$ fuel cell and $MeOH-O_2$ fuel cell-advantages and applications.

Engineering applications – future water powered car, Hydrogen production and storage.

UNIT - V

Corrosion and its prevention (7L)

Corrosion – basic concepts –types of corrosion, chemical, electrochemical corrosion (absorption of O_2 and evolution of H_2). Types of electrochemical corrosion – galvanic corrosion, pitting corrosion- factors affecting the rate of corrosion.

Cathodic protection – sacrificial anodic protection and impressed current cathodic protection method. Methods of metallic coatings-hot dipping (**tinning and galvanizing**), metal cladding (**Al cladding**), electroplating (**copper plating**) and electroless plating (**nickel plating**).

UNIT-VI

Organic reactions and drug molecules (5L)

Introduction : reactions involving substitution(S_N1, S_N2) addition to double bond(C=C), elimination(E^1 and E^2), oxidation (using $KMnO_4$, CrO_3), reduction (Hydrogenation by Ni/H_2, Pd/C)

Drugs : Definition, classification structure and applications of commonly used drug molecules-paracetamol, aspirin, ibuprofen and diphenhydramine (Benadryl)

Principles of spectroscopy and selection rules: Electronic spectroscopy. Fluorescence and its applications in medicine. Vibrational and rotational spectroscopy of diatomic molecules-**Applications**.

TEXT BOOKS:

1. Engineering Chemistry: by Jain & Jain ,Dhanapathrai Publications (2015)
2. Engineering Chemistry: by Thirumala Chary & Laxminarayana, Scitech Publications (2016)
3. Engineering Chemistry: by & B.Rama Devi, Prsanta Rath & Ch. Venkata Ramana Reddy, Cengage Publications (2016)

REFERENCE BOOKS:

1. Fundamentals of Molecular Spectroscopy by C. N. Banwell
2. Drugs by David Krupadanam- Universities Press
3. University chemistry by B. H. Mahan
4. Chemistry: Principles and Applications, by M. J. Sienko and R. A. Plane
5. Organic Chemistry: Structure and Function by K. P. C. Volhardt and N. E. Schore, 5th Edition http://bcs.whfreeman.com/vollhardtschore5e/default.asp

Course Outcomes: *After completion of the course, the student will be able to*

1. *Understand and analyse microscopic chemistry in terms of atomic orbitals, molecular orbitals and intermolecular forces.*
2. *Identify and differentiate conductivity of polymers, thermoplastic, thermosetting plastics and various lubricants.*
3. *Recognize and select the domestic and industrial problems caused by hard water and also learn about the municipal water treatment using various methods.*
4. *Understand and interpret the important fundamental concepts of electrochemistry and solve the problems related to batteries.*
5. *Differentiate the types of corrosion and methods used to prevent the corrosion.*
6. *Learn and implement synthesis of drug molecules and learn fundamentals of analytical techniques like electronic, vibrational and rotational spectroscopy.*

a	b	c	d	e	f	g	h	i	j	k	l	m
H	H	L	H	M		M	L	H		L		

Syllabus for B. Tech I Year I semester
Electronics and Computer Engineering
PROBLEM SOLVING USING C
(Common to all branches)

L	T	P/D	C
3	0	0	3

Code: 7FC01

Course Outcomes: After completion of this course student will learn

1. *To formulate simple algorithms for arithmetic, logical problems and to translate the algorithms to programs(in C language)*
2. *To test and execute the programs and correct syntax and logical errors, to implement conditional branching, iteration and recursion*
3. *To decompose a problem into functions and synthesize a complete program using divide and conquer approach.*
4. *To use arrays, pointers and structures to formulate algorithms and programs.*
5. *To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.*
6. *To apply programming to solve simple numerical method problems, namely rot finding of function, differentiation of function and simple integration.*

UNIT I

Introduction to Programming: Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, operating system, compilers etc.)

Idea of Algorithm: steps to solve logical and numerical problems. Representation of Algorithm: Flowchart/Pseudocode with examples. From algorithms to programs; source code, variables (with data types) variables and memory locations, Syntax and Logical Errors in compilation, object and executable code

UNIT II

History of C language, Characteristics of C language, Structure of C Language, C Tokens Arithmetic expressions, Operator Precedence & **Associativity** Conditional Branching and Loops Writing and evaluation of conditionals and consequent branching and **Jumping Constructs Pretest and Post test**, Iteration and loops (3 lectures)

UNIT III

Function: Functions (including using built in libraries), Parameter passing in functions, call by value, passing arrays to functions: idea of call by reference, **Storage Classes**

Recursion: Recursion, as a different way of solving problems. Example programs, such as Finding Factorial, Fibonacci series, Ackerman function etc.

UNIT IV

Arrays: Arrays (1-D, 2-D), Character arrays **Ragged Arrays and Dynamic Arrays** Basic Algorithms Searching, Basic Sorting Algorithms (Bubble, Insertion and Selection), Finding roots of equations, notion of order of complexity through example programs (no formal definition required) Quick sort or Merge sort.

UNIT V

Pointers Idea of pointers, Defining pointers, Use of Pointers in self-referential structures, notation of linked list (no implementation) **Dynamic Memory allocation Functions**.

Strings: String Handling Functions.

UNIT IV

Structure: Structures, Defining structures and Array of Structures, **Nested Structures enum, typedef** File handling (only if time is available, otherwise should be done as part of the lab) **File Handling Functions, File Modes, File Operations**

Suggested Text Books

(i) Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill

(ii) E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill Suggested

Reference Books:

Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India

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

Syllabus for B. Tech I Year I semester
Electronics and Computer Engineering
MATHEMATICS – I
(Common to CSE, IT & ECM)

L	T	P/D	C
3	1	0	4

Code: 7HC07

***Pre Requisites**: Mathematics Knowledge at Pre-University Level.*

***Course Objectives:** To make the students to understand and expected to learn*

1. *Special functions such as Beta & Gamma functions and their properties, evaluation of improper integrals and the applications of definite integrals.*
2. *Mean value theorems and their applications to the given functions, series expansions of a function using Taylor's theorem.*
3. *Basic operation of matrices and about the linear system and some analytical methods for solution.*
4. *Dependence and independence of vectors, basis, linear transformation, rank-nullity theorem.*
5. *Concept of Eigen value and Eigen vector- properties and applications for orthogonal transformation.*
6. *Basic concepts of Inner product spaces.*

Syllabus

Module 1: Calculu1s-1:
Evolutes and involutes; Beta and Gamma functions and their properties; Evaluation of improper integrals, Applications of definite integrals to evaluate surface areas and volumes of revolutions.

Module 2: Calculus-2:
Rolle 's Theorem and Mean value theorems (Statements and Geometrical Interpretations if any); Taylor's and Maclaurin's theorems with remainders (without proof); Taylor's and Maclaurin's series expansion.

Module 3: Matrices:
Inverse of a matrix by Gauss Jordan method, rank of a matrix: System of linear equations- rank method/ Gauss Elimination method. Symmetric, skew-symmetric and orthogonal matrices;

Module 4: Vector spaces:
Vector Space, linear dependence/Independence of vectors, basis, dimension; Linear transformations (maps), range and kernel of a linear map, rank and nullity, rank-nullity theorem, Matrix associated with a linear map.

Module 5: Vector spaces:
Eigenvalues, Eigenvectors, symmetric, skew-symmetric, and orthogonal Matrices, Diagonalization.

Module 6: Inner product spaces:
Inner product spaces (Definition and Examples), Gram-Schmidt orthogonalization process (Theorem statement without proof and finding orthonormal basis); orthogonal complements.

Text Books

(i) B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000.
(ii) A Textbook of B.Sc. Mathematics Vol.III (Theory and Practical), B.V.S.S.Sarma, N. Krishnamurthy, S.Anjaneya Sastry and V. Venkateshawararao, S.Chand Publications.
(iii) Engineering Mathematics, Srimanta Pal, OXFORD university press

Reference Books

(i) Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
(ii) B.S. Grewal, Elementary Engineering Mathematics, Khanna Publishers
(iii) C Sankaraiah, A Text book of Engineering Mathematics – I, VGS Book Links
(iv) G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
(v) Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008.
(vi) D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005.
(vii) V. Krishnamurthy, V.P. Mainra and J.L. Arora, An introduction to Linear Algebra, Affiliated East–West press, Reprint 2005.
(viii) Engineering Mathematics, Ravish R.Singh, McGraw Hill Education.

Course Outcomes: *After the course completion the students will be able to*

1. *Solve the problems using special functions; evaluate surface areas and volumes of revolutions.*
2. *Verify the mean value theorems and also express the given function in series form using Taylor's theorem.*
3. *Check the consistency or inconsistency of a linear system and also solve real time problems.*
4. *Identify the dependence and independence of vectors and solve the problems on rank-nullity theorem.*
5. *Calculate the Eigen values and Eigen vectors of a matrix and their application for orthogonal transformation.*
6. *Solve problems on Inner product spaces.*

1	2	3	4	5	6	7	8	9	10	11	12
H											M

Syllabus for B. Tech I Year I semester
Electronics and Computer Engineering
WORKSHOP/MANUFACTURING PRACTICES
(Common to EEE, ECM & ME)

L	T	P/D	C
1	0	0	1

Code: 7BC01

Course Objectives:
Upon completion of this course, the students will gain knowledge of the different manufacturing processes which are commonly employed in the industry, to fabricate components using different materials.

COURSE OUTCOMES:
1) *To understand various basic tools to perform simple joints using metal and wood.*
2) *To understand the principle of various electrical and electronic appliances and their applications.*
3) *To understand the manufacturing process of welding, casting and tin smithy and their applications.*
4) *To understand the operation of basic as well as advanced machines used for fabrication of Metals, Plastics and Glass.*

I: Theory: In theory classes the following syllabus is to be covered in 10hrs using PPTS and Videos (Elementary treatment only)

1. Fitting & Power Tools
2. Electrical & Electronics Appliances
3. Carpentry
4. Plastic molding & Glass Cutting
5. Metal Casting
6. Metal Joining: Arc & gas welding and brazing
7. Metal forming
8. Machining
9. Advanced manufacturing methods: (Micro machining, USM,ECM,EDM)
10. CNC machining & Additive Manufacturing

Suggested Text/Reference Books:

(1) Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., "Elements of Workshop Technology", Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.
(2) Rao P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata McGrawHill House, 2017.

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

Syllabus for B. Tech I Year I semester
Electronics and Computer Engineering
ENGLISH (Reading, Listening and Writing)
(Common to ECM, CSE, IT and Civil)

L	T	P/D	C
1	0	0	1

Code: 7HC01

Course Objectives *: The students will*
- *acquire knowledge on various types of listening techniques, barriers and benefits of listening*
- *recognize the speech sounds and learn the intonation patterns*
- *learn various vocabulary patterns*
- *develop the ability to structure and punctuate the sentences*
- *learn different reading techniques*
- *learn different writing skills*

Course Outcomes *: At the end of the course the students will be able to*
- *understand and differentiate different types of listening techniques used to interact with real world problems*
- *differentiate the speech sounds and improve their accent and modulation while speaking*
- *understand and illustrate different word roots, word derivatives – synonyms, antonyms and word inflections*
- *discriminate a variety of sentence types, their structure and use punctuations*
- *get acclimatized to reading strategies and note making.*
- *develop proficiency in writing and preparing resume*

Unit-I : Listening

1.1 Importance of Listening;
1.2 Types of listening
1.3 Barriers to Listening
1.4 Benefits of Listening

Unit-II: Basic Communication Skills

2.1 Introduction to Speech Sounds
2.2 Vowels, Diphthongs, Consonant Sounds
2.3 Significance of word accent
2.4.Intonation Patterns

Unit-III: Vocabulary

3.1 Word Roots - Affixes: Prefixes and Suffixes
3.2 Homophones, Homonyms, Homographs
3.3 Synonyms – Antonyms
3.4 One word substitutes
3.5 Idioms and Phrases

Unit-IV: Basic Writing Skills

4.1 Sentence Structure
4.2 Kinds of Sentences
4.3 Punctuation in Writing

Unit-V : Reading Comprehension

5.1 Skimming and Scanning
5.2 Prediction Techniques and Inferring
5.3 Note Making
5.4 Reading Comprehension

Unit-VI: Writing Skills

6.1 Paragraph Writing
6.2 Paraphrasing
6.3 Letter Writing
6.4 Resume Writing

Suggested Readings:

(i) English grammar just for you Rajeevan Karal, Oxford publications
(ii) Practical English Usage. Michael Swan. OUP. 1995.
(iii) Remedial English Grammar. F.T. Wood. Macmillan.2007
(iv) On Writing Well. William Zinsser. Harper Resource Book. 2001
(v) Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press. 2006.
(vi) Communication Skills. Sanjay Kumar and Pushp Lata. Oxford University Press. 2011.
(vii) Learn to Write by Dr. G. Varalakshmi, Kindle Edition 2016
(viii) A practical course for developing writing skills in English by J.K. Gangal, PHI Learning Pvt Ltd.

Syllabus for B. Tech I Year I semester
Electronics and Computer Engineering
HUMAN VALUES AND PROFESSIONAL ETHICS IN HIGHER EDUCATION

L	T	P/D	C
3	0	0	0

Code: 7HC20

Orientation Programme for First Year B.Tech Students Syllabus

Course Duration: *Three Weeks* ***Evaluation:*** *Is done based on the Grading.*

Course Objectives *This introductory course input is intended*

1. *To help the students appreciate the essential 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings.*
2. *To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.*
3. *To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature. Thus, this course is intended to provide a much needed orientational input in value education to the young enquiring minds.*

Course Outcomes: *Student will be able to:*

1. *Learns Being a human, understands human values and purpose of education*
2. *Understands the importance of different harmony levels needed.*
3. *Understand Self and being in the current moment are the sources of happiness.*
4. *Improves Learning capabilities and communication skills.*
5. *Understands and appreciate the importance of personality development and yoga for a holistic life.*
6. *Understands the essence of Morals, Ethics, Values and Social responsibilities for successful life.*

UNIT – I: INTRODUCTION TO HUMAN VALUES: The current status of an individual, at the level of Individual, Family, Society and Nature. Basis of Human Beings' Conduct, Desire – Aim, Objective and Purpose. Rationale of Success. Role of Education - Sanskar. Definition of Human aspiration, Human Conduct, Human Being – Physical Facility and Relationships, Right Understanding for Human Being, Achievement of Prosperity.

UNIT – II: HARMONY AND HUMAN BEING: Understanding the co-existence of human being, Different Harmony levels –Harmony in the Human Being, Harmony in the Family, Harmony in the Society and Harmony in Nature / Existence. Understanding the Relationships, Harmony in the Family, Feelings in Relationship: Trust, Respect, Affection, Care Guidance, Reverence, Glory, Gratitude and Love.

UNIT – III: THE CYCLE OF HAPPINESS: Meaning of Happiness and Unhappiness, Sources of Happiness, Self Investigation, Five Dimensions of Human order – Education, Health, Production, Justice and Exchange. Harmony at the Individual Level and Family level, Concerns at Individual, Family and Nature level. Different approach of People behavior – Active, Reactive and Proactive. Resource depletion, Global Warming, Pollution, Harmony in Nature.

UNIT – IV: IMPROVING LEARNING CAPABILITIES: Principles of learning, Study skills and E-Learning, Listening skills, Soft skills and Employability skills, Effective Reading and Reviewing, Reading Comprehension, Textbook Reading strategies, Effective Communication in English, Test taking strategies.

Unit – V: PERSONALITY DEVELOPMENT: Self Development, Goal Setting, Motivation, Time Management, Positive Attitude, Building Self Confidence, Decision Making, The Discovery Wheel, Some attributes of a good personality, Memory Management, Interpersonal Skills, Importance of Yoga and Meditation.

UNIT – VI: ROLES AND RESPONSIBILITIES OF STUDENTS: Responsibilities of the students in shaping themselves, Effective and Successful Habits, Difference between studying in a Professional college and High school / Junior college, Characteristics of a Successful Student, Morals, Ethics and Values, Some tips to students to do well in B.tech program and also later in Professional Career.

TEXT BOOK:

1. **Improving Learning Capabilities and Personality Development – Manual prepared by SNIST for private circulation**

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

Syllabus for B. Tech I Year I semester
Electronics and Computer Engineering
CHEMISTRY LAB

L	T	P/D	C
0	0	3	1.5

Code: 7HC63

***Course Objectives**: The student will be able to learn:*

1. *Preparation of coordination complex NiDMG Complex*
2. *Determination of surface tension*
3. *Determination of viscosity*
4. *Saponification /acid value of an oil*
5. *Ion exchange column for removal of hardness of water / Estimation of Hardness of water by EDTA Method*
6. *Determination of chloride content of water*
7. *Determination of cell constant and conductance of solutions (HCl Vs NaOH / Mixture of acid Vs Strong base)*
8. *Potentiometry - determination of redox potential and emf ($FeSO_4$ Vs $KMNO_4$ / HCl Vs NaOH)*
9. *Determination of the rate constant of acid catalyzed hydrolysis of methylacetete*
10. *Synthesis of a polymer- Thiakol rubber / Urea-Farmaldehyde resin*
11. *Synthesis of a drug- Aspirin*
12. *Thin layer chromatography*

List of Experiments

1. Preparation of coordination complex NiDMG Complex
2. Determination of surface tension
3. Determination of viscosity
4. Saponification/acid value of an oil
5. Ion exchange column for removal of hardness of water / Estimation of Hardness of water by EDTA Method
6. Determination of chloride content of water
7. Determination of cell constant and conductance of solutions (HCl Vs NaOH / Mixture of acid Vs Strong base)
8. Potentiometry - determination of redox potential and emf ($FeSO_4$ Vs $KMNO_4$ / HCl Vs NaOH)
9. Determination of the rate constant of acid catalyzed hydrolysis of methylacetete
10. Synthesis of a polymer- Thiakol rubber / Urea-Farmaldehyde resin
11. Synthesis of a drug- Aspirin
12. Thin layer chromatography

***Course Outcomes:** After completion of the course, the student will be able to learn:*

1. *Methods to prepare inorganic complexes.*
2. *The process to determine surface tension of different liquids using stagnometer*
3. *The process to determine viscosity of lubricants by using redwood viscometer.*
4. *How to find acid value of an oil.*
5. *The principle and determination of Hardness of a water sample.*
6. *The methods to estimate amount of chlorine in water.*
7. *To determine unknown concentration of acid by using conductometric method.*
8. *To determine unknown concentration of acid by using potentiometric method.*
9. *Estimate rate constants of reactions from concentration of reactants/products as a function of time.*
10. *Methods to prepare industrially important polymers.*
11. *The method of preparation for organic compounds.*
12. *To separate the organic compounds from their mixture by using Thin layer chromatography.*

a	b	c	d	e	f	g	h	i	j	k	l	m
H	H	L	H	M		M	L	H		L	H	H

H: High M: Medium L: Low

Syllabus for B. Tech I Year I semester
Electronics and Computer Engineering
PROBLEM SOLVING USING C LAB
(Common to all branches)

L	T	P/D	C
0	0	3	1.5

Code: 7FC61

Course Outcomes:
After completion of this course student will learn

1. *To formulate the algorithms for simple problems*
2. *To translate given algorithms to a working and correct program*
3. *To be able to correct syntax errors as reported by the compilers*
4. *To be able to identify and correct logical errors encountered at run time*
5. *To be able to write iterative as well as recursive programs*
6. *To be able to represent data in arrays, strings and structures and manipulate them through a program*
7. *To be able to declare pointers of different types and use them in defining self referential structures.*
8. *To be able to create, read and write to and from simple text files.*

[The laboratory should be preceded or followed by a tutorial to explain the approach or algorithm to be implemented for the problem given.]

1. Unit I (Cycle 1)

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

2. Unit II (Cycle 2)

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

3. Unit II (Cycle 3)

a. Write a C program to find the roots and nature of the roots of a quadratic equation, given its coefficients.
b. Write a C program for finding the largest of three given numbers.

c. A salesman gets a commission of 5% on the sales he makes if his sales is below Rs.5000/- and a commission of 8% on the sales that exceeds Rs.5000/- together with Rs.250/-. Write an algorithm or a flowchart and develop C program for computing the commission of the salesman, given his sales.

4. Unit III (Cycle 4)

1. Write three C programs to print a multiplication table for a given number using while, do-while, and for loops.
2. Write a C program to compute the sum of:
3. $1+x+x^2+x^3+\ldots\ldots\ldots\ldots+x^n$, given x and n.
4. 1! + 2! + 3! + . . . + n!, given n.
5. $1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10! + \ldots$ to n terms where the n^{th} term becomes less than 0.0001.

5. Unit III (Cycle 5)

a. Write a C program in the menu driven style to perform the operations +, -, *, /, % between two given integers.

b. Write a C program to find the largest and the least of some numbers given by the user.

c. Write a C program to find the sum of the digits of a positive integer.

6. Unit III (Cycle 6)

a. Write C functions for the following:
   i. A function that takes an integer n as argument and returns 1 if it is a prime number and 0 otherwise.
   ii. A function that takes a real number x and a positive integer n as arguments and returns x^n.
   iii. A function that takes a positive integer n as an argument and returns the n^{th} Fibonacci number.

b. Using recursion write C functions for the following:
   i. Factorial of a non-negative integer n.
   ii. Number of combinations of n things taken r at a time.
   iii. Greatest Common Divisor of two integers.
   iv. Least Common Multiple of two integers.

7. Unit III (Cycle 7)

i. Write a menu driven style program to compute the above functions (cycle 6) on the choice of the function given by the user.

ii. 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.

iii. Write a program to generate Pascal's triangle.

iv. Write a program to count the number of letters, words, and lines in a given text.

8. Unit IV (Cycle 8)

a. 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.

b. 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.

c. Write a program to store user given numbers in an array and find the locations of minimum and maximum values in the array and swap them and display the resulting array.

9. Unit IV (Cycle 9)

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

10. Unit V (Cycle 10)

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

11. Unit VI (Cycle 11)

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

12. Unit VI (Cycle 12)

a. Write a program to:
   i. 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.
   ii. Open the file created above and display the contents of the file.
   iii. Copy a file into some other file, file names given by the user or by command line arguments.
   iv. Append a user mentioned file to another file.
   v. Reverse the first n characters of a file.

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

Syllabus for B. Tech I Year I semester
Electronics and Computer Engineering
ENGLISH LAB (Reading, Listening and Writing)
(Common to ECM, CSE, IT and Civil)

L	T	P/D	C
0	0	2	1

Code: 7HC61

Course Objectives *: The students will*

- *acquire knowledge on various types of listening techniques, barriers and benefits of listening*
- *recognize the speech sounds and learn the intonation patterns*
- *learn various vocabulary patterns*
- *develop the ability to structure and punctuate the sentences*
- *learn different reading techniques*
- *learn different writing skills*

Course Outcomes *: At the end of the course the students will be able to*

- *understand and differentiate different types of listening techniques used to interact with real world problems*
- *differentiate the speech sounds and improve their accent and modulation while speaking*
- *understand and illustrate different word roots, word derivatives – synonyms, antonyms and word inflections*
- *discriminate a variety of sentence types, their structure and use punctuations*
- *get acclimatized to reading strategies and note making.*
- *develop proficiency in writing and preparing resume*
-

Unit-I : Practice sessions on
Listening for Basic Vocabulary
Listening for General Information
Listen for specific information
Listening Comprehension

Unit-II: Practice sessions on Pronunciation
Articulation of Vowel and Consonant sounds
Listening for Word accent
Intonation Patterns

Unit-III: Exercises on Word Roots
Affixes : Prefixes and Suffixes
Identifying Homophones,
Homonyms, Homographs
Synonyms - Antonyms
One word substitutes
Idioms and Phrases

Unit-IV: Exercises on
Punctuation and Spelling
Error Identification in Sentences

Conversion of Sentences

Unit-V : Practice sessions on

Using passages for skimming and scanning
Note Making using Texts
Reading Comprehension using different techniques

Unit-VI: Exercises on

Paragraph Writing using hints/Guided Paragraphs
Writing Letters
Writing Resume

Suggested Readings:

(i) English grammar just for you Rajeevan Karal, Oxford publications
(ii) Practical English Usage. Michael Swan. OUP. 1995.
(iii) Remedial English Grammar. F.T. Wood. Macmillan.2007
(iv) On Writing Well. William Zinsser. Harper Resource Book. 2001
(v) Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press. 2006.
(vi) Communication Skills. Sanjay Kumar and Pushp Lata. Oxford University Press. 2011.
(vii) Learn to Write by Dr. G. Varalakshmi, Kindle Edition 2016
(viii) A practical course for developing writing skills in English by J.K. Gangal, PHI Learning Pvt Ltd.

1	2	3	4	5	6	7	8	9	10	11	12
H											M

Syllabus for B. Tech I Year I semester
Electronics and Computer Engineering
WORKSHOP/MANUFACTURING PRACTICES LAB
(Common to EEE, ECM & ME)

Code: 7BC61

L	T	P/D	C
0	0	3	1.5

Course Objectives:

1) *To identify various basic tools to perform simple joints using metal and wood.*
2) *To recognize various electrical and electronic and their applications.*
3) *To understand the manufacturing process of welding , casting and tinsmithy and apply the processes in making simple products.*
4) *To understand and operate basic machines for fabrication of Metals, Plastics and Glass.*
5) *To understand the functions and parts of commonly used domestic appliances.*

COURSE Outcomes:

1. *After completion of the course , the student will be able to fabricate components with their own hands.*
2. *Assemble different components and produce small devices of their interest.*

Work shop and Manufacturing Practices: Minimum of 10 experiments out of twelve given here under are to be completed

LIST OF EXPERIMENTS

S. No.	Trades	List of Experiments
1	Fitting Shop	1. Preparation of T-Shape Work piece 2. Preparation of U-Shape Work piece which contains: Filing, Sawing, Drilling, Grinding.
2	Carpentry	3.Practice of Cross Half lap joint 4. Practice of Half lap Dovetail joint
3	Electrical & Electronics	5. One lamp one switch Practice 6. Stair case wiring: Practice
4	Welding shop (Arc & Gas)	Demonstration of Gas and Resistance welding 7. Practice of Lap and Butt joint using Arc welding
5	Casting	8.Preparation of mould by using split pattern 9. Mould preparation and pouring of molten metal.
6	Tin Smithy	10. Preparation of Rectangular Tray & Square box
7	Machine Shop	11. Demonstration of turning , Drilling and Reaming operations
8	Plastic molding & Glass Cutting	12 a) Demonstration of Injection Moulding b) Demonstration of Glass Cutting with hand tools
9	Domestic Appliances	13.Demonstration of Electric Iron, fan, Mixer, Hair Drier, Washing Machine etc.
10	Lab project	14. Making various components and / or assembling the components which can be useful in domestic / engineering applications

Syllabus for B. Tech I Year I semester
Electronics and Computer Engineering
TECHNICAL SEMINAR - I

Code: 7D191

L	T	P/D	C
0	0	2	1

Course Objective :

Develop ability to be a public speaker. Learn the importance of delivering seminars for demonstrating oratory and develop interview facing skills.

Course Outcomes: *After completing this course, the student will be able to*

1. *Identify current general, political and technology related topics.*
2. *Arrange and present seminar in a effective manner*
3. *Collect, survey and organize content in presentable manner*
4. *Demonstrate oratory skills with the aid of Power Point Presentations*
5. *Exhibit interview facing skills and team leading qualities*

Procedure

1. Seminar in-charges shall highlight the significance of technical seminar in the first two sessions and enlighten the students on the utility of these seminars.
2. The slots, titles shall be decided upfront and seminar in charge shall take signatures.
3. The same sheet shall be affixed in the respective classrooms and seminar register.
4. If any student fails to present his/her seminar on the given slot, to genuine reasons, they may be asked to present in the subsequent slot/week.
5. Progress of the seminars need to be reviewed by the concerned HOD once in 15 days.
6. The evaluation for technical seminars has to be informed to students and displayed in the classrooms.
7. Report and presentation must contain topic, introduction, explanation, diagrams, tables, applications and conclusions.

Distribution of marks

There shall be a Technical Paper writing and seminar evaluated for 100 marks in First Year First Semester. The evaluation is purely internal and will be conducted as follows:

Literature survey, topic and Content	: 10 marks
Presentation including PPT	: 15 marks
Seminar Notes	: 10 marks
Interaction	: 5 marks
Report	: 10 marks
Attendance in the seminar class	: 10 marks
Punctuality in giving seminar as per schedule time and date	: 10 marks
Mid semester viva (on the seminar topics completed up to the end of 9^{th} week	: 10 marks
End semester Viva	: 20 marks
Total	**100 Marks**

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

Syllabus for B. Tech I Year II semester
Electronics and Computer Engineering
ENGINEERING PHYSICS
(Common to CSE, IT & ECM)

Code: 7HC05

L	T	P/D	C
3	1	0	4

Course Objectives:

- *To know about the semiconductors, types, carrier concentration, Thermistor, Hall effect and also to understand the concept of PN-junction, I-V Characteristics, LED, Solar Cell and Photo diode.*
- *Explain about the Quantum Mechanics to understand wave particle duality, necessity of quantum mechanics to explore the behavior of sub atomic particles. Schroedinger's Time Independent Wave Equation, Physical Significance of the Wave Function – Application of Schroedinger wave equation.*
- *To understand the basic concepts of normal light, Laser and its applications and to know about the fiber optics, principle (TIR), Numerical Aperture, Types of optical Fibers, Step index and graded index Fibers, attenuation in optical fibers. Applications: optical fiber communication system, fiber optic sensors, medical endoscopy.*
- *To study the concepts of magnetism and superconductivity, Bohr magneton, Hysteresis nature, domain structure, Meissner effect, types of superconductors, BCS theory and applications of superconductors.*
- *To understand the concepts of dielectrics, polarizations and its types, internal fields, Clausius-Mossitti equation, Frequency and temperature effect on dielectrics and its applications – Piezo-electricity, pyro-electricity and ferro-electricity.*
- *To discuss about the nano-technology, preparation techniques and characterization (XRD, SEM & TEM), CNTs and to know about the fundamentals of radioactivity and its applications.*

Unit: 1

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

Semiconductor devices

Formation of PN Junction and working of PN Junction. Energy Diagram of PN Diode, Diode equation (Quantitative treatment), I-V Characteristics of PN Junction, Application - LED, Solar Cell and Photo diode.

Unit: 2

Wave nature of particles, Schroedinger equation and its application: Waves and Particles, de Broglie Hypothesis, Matter waves, Davisson and Germer's Experiment, G.P. Thomson Experiment, Heisenberg's Uncertainty Principle, Schroedinger's Time Independent Wave Equation – Physical Significance of the Wave Function – Application of Schroedinger wave equation - Particle in One Dimensional Potential Box.

Unit: 3

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

Fiber optics: Introduction, Principle of Optical Fiber, Acceptance Angle and Acceptance Cone, Numerical Aperture, Types of Optical Fibers, Step index and graded index Fibers Attenuation in Optical Fibers. Applications: Optical Fiber communication system, Fiber Optic Sensors, Medical Endoscopy.

Unit: 4

Magnetic and Superconducting materials: Permeability, Field Intensity, Magnetic Induction, Magnetization, Magnetic Susceptibility, Origin of Magnetic Moment, Bohr Magneton. Hysteresis behavior of Ferro Magnetic materials based on Domain theory. Hard and Soft Magnetic Materials, Properties of Anti-Ferro and Ferri Magnetic Materials and their applications,

Super conductivity, effect of Magnetic Field, Critical current density, Meissner effect, Type-I and Type-II superconductors, BCS theory, applications of superconductors.

Unit: 5

Dielectric materials and their properties: Electric Dipole, Dipole Moment, Dielectric Constant, Electric Susceptibility, Electronic and Ionic polarizability (Quantitative) Orientation Polarization (Qualitative), Internal fields in Solids, Clausius - Mossotti equation, Frequency and temperature effect on Dielectrics (Qualitative), Applications - Piezo-electricity, Pyro-electricity and Ferro-electricity.

Unit: 6

Nanotechnology: Origin of Nanotechnology, Nano Scale, Surface to Volume Ratio, Quantum Confinement, Bottom-up Fabrication, Sol-gel, Precipitation, Chemical vapor Deposition(CVD); Top-down Fabrication; Thermal evaporation, Ball Milling, Characterization of Nano materials (XRD&TEM), carbon nano tubes(CNTs), Applications of Nano Materials.

Nuclear Energy: Radioactivity, Nuclear binding energy, Nuclear fission, Nuclear fusion, α, β, γ rays decay, Geiger-Muller counter and practical applications of nuclear physics.

Text Books:

1.B.K. Pandey & S. Chaturvedi Engineering Physics, Cengage Learning

2.D.K. Bhattacharya and Poonam Tandon, OXFORD university press.

Reference Books:

1. Charles Kittel, Introduction to Solid State Physics, John Wiley Publisher

2. A.S. Vasudeva , Modern engineering Physics, S Chand

3. Dekker, Solid State Physics

4. Dr. M. N. Avadhanulu, Engineering Physics, S Chand

5. Dekker, Solid State Physics

6. Halliday and Resnick, Physics

7. S.O. Pillai, Solid State Physics

8. P K Palanisamy, Engineering Physics, Sitech Publications

9. A. Ghatak - Optics

Course Outcomes:

After completing the course, students will be able to

- *Explain semiconductor behaviour, types, carrier concentration, Hall effect, Thermistor, demonstrate and analyze semiconductor devices like a PN-junction, I-V characteristics, LED, solar cell, photo diode and their applications.*
- *Differentiate the wave and particle, de-Broglie matter waves-its experimental evidence, Schroedinger's wave concept and its application for a particle in one dimension box.*
- *Explain about emission, its types, laser principle, types, working and its applications and to reveals about TIR principle, optical fiber-types and signal propagation, attenuation, communication system and applications of optical fibers (sensors and medical endoscopy)*
- *Reveals about the magnetism-its origin and types, Hysteresis, domain theory, Anti-ferro and ferri magnetism superconductivity, experimental facts, theoretical analysis, types of superconductors and its applications.*
- *Explain the basic concepts of dielectric materials, polarization and its types, local fields, frequency and temperature effect on dielectrics and their applications (piezo, ferro and Pyro electricity).*
- *Summarize nano & bulk concepts, surface to volume ratio, quantum confinement, CNTs and preparation methods (physical & chemical), analysis the techniques like XRD, SEM, TEM and also to understand the radioactivity, fusion & fission, alpha, beta and gamma rays decay and its applications.*

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

Syllabus for B. Tech I Year II semester
Electronics and Computer Engineering
NETWORK ANALYSIS
(ECE I Year I Sem & ECM I Year II Sem)

Code: 7AC02

L	T	P/D	C
3	0	0	3

Course Objectives: *To make the student to understand:*

1. *The fundamentals of the basic elements and their application in electrical circuits.*
2. *The concept of single phase circuits and their analysis.*
3. *The basic concepts of magnetic circuits and their applications*
4. *Verify the network theorem and their application in electrical networks*
5. *Understand the concepts, their significance and application of two port network.*
6. *Understand the concepts, transient response and its importance.*

Course Outcomes: *After completion of the course work the student will be able to*

1. *Apply Kirchhoff's laws for solving electrical circuits.*
2. *Understand the basic concepts of single phase AC circuits and ability to solve the problems related to steady state analysis*
3. *Analyze and solve the problems of composite magnetic circuits.*
4. *Apply and solve the problem associated with electrical networks using network theorems*
5. *Apply the principles and solve the problems related to two port network by using various parameters.*
6. *Understand the concepts and solve the problems related to transient response.*

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

UNIT – II: **SINGLE PHASE A.C. CIRCUITS:**
R.M.S and Average values, Form factor for different periodic wave forms, Steady state Analysis of R, L and C (in series, parallel and series-parallel combinations) with sinusoidal excitation.
Resonance in series and parallel circuits, Concept of band width and Q factor.

UNIT – III MAGNETIC CIRCUITS:
Basic terms in Magnetic Circuits, Comparison between electric and magnetic circuits, Composite magnetic circuit, Analysis of series, parallel magnetic circuits, Faraday's Laws of electromagnetic induction, Concept of self and mutual inductance, Dot convention, Co-efficient of coupling.

UNIT – IV: NETWORK THEOREMS:
Superposition, Reciprocity, Thevenin's, Norton's, Maximum Power Transfer and Millman's Theorems - statements and problems solving using dependent and independent sources with D.C. excitation.

UNIT – V: TWO–PORT NETWORKS:
Z,Y, ABCD and h-parameters, Conversion of one parameter to another parameter, Condition for reciprocity and symmetry, two port network connections in series, parallel and cascaded configurations, Problem solving.

UNIT – VI: TRANSIENT ANALYSIS:

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

TEXT BOOKS:

1. Circuits & Networks – A.Sudhakar and Shyamamohan S.Palli, Tata McGraw Hill, 3rd edition.
2. Circuits & Networks – M.S. Sukhija, K.N. Nagasarkar, Oxford University Press, 2nd edition.

REFERENCES:

1. Network Analysis - M.E. Vanvalkenberg, 3rd edition, PHI.
2. Circuit theory (Analysis & Synthesis) – A.Chakravarthy, Dhanpath Rai & Co., 6th edition.
3. Engineering Circuit Analysis – William Hayt and Jack E Kemmerly, McGraw Hill 5th Edition, 1993.

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

Syllabus for B. Tech I Year II semester
Electronics and Computer Engineering
PROBABILITY AND STATISTICS
(Common to CSE, IT, ECM)

L	T	P/D	C
3	1	0	4

Code: 7HC09

Pre Requisites*: Mathematics Knowledge at Pre-University Level.*

Course Objectives: *To make the students to understand and expected to learn*

1. *Basic concepts of the probability, discrete random variable.*
2. *Continuous probability distributions and their properties.*
3. *Bivariate distribution methods.*
4. *Preliminaries of basic statistics also correlation and regression.*
5. *Method of least squares and testing of hypothesis for large size samples.*
6. *Tests concerned to small size samples and goodness of fit and independence of attributes using chi-square distribution.*

Syllabus

Module 1: Basic Probability:

Axioms of Probability, conditional probability, Bayes theorem (without proof); Discrete random variables, Binomial and Poisson probability distributions, Poisson approximation to the binomial distribution, Expectation and Variance of Discrete Random Variables, Chebyshev's Inequality.

Module 2: Continuous Probability Distributions:

Continuous random variables and their properties, distribution functions and densities, normal, evaluation of statistical parameters, exponential and gamma densities.

Module 3: Bivariate Distributions:

Bivariate distributions and their properties, distribution of sums and quotients, conditional densities.

Module 4: Basic Statistics:

Measures of Central tendency: Moments, skewness and kurtosis - correlation and regression – rank correlation. Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves.

Module 5: Applied Statistics for Large Samples:

Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means.

Module 6: Applied Statistics for Small samples:

Test for single mean, difference of means, test for ratio of variances - Chi-square test for goodness of fit and independence of attributes.

TEXT BOOKS:

(i)) Probability and statistics, T K V Iyengar and others, S Chand Publications.
(ii) Schaums outline of theory and problems of probability and statistics, Murray R Spiegel, TMH.

REFERENCE BOOKS:

(i) Probability and Statistics for Engineers: Miller and John E. Freund, PHI Publishers, 9th Edition.
(ii) Introduction to Probability and Statistics, William Mendenhall, Cengage Learning.
(iii) Probability and Statistics for Science and Engineering, G.Shnaker Rao, University Press.

Course Outcomes: *After the course completion the students will able to*

1. *Evaluate the probability and also solve the problems of discrete random variable.*
2. *Solve the problems on continuous probability distribution.*
3. *Identify and solve the problems of bivariate distribution*
4. *Evaluate statistical parameters and also problems of Correlation and Regression.*
5. *Solve problems on Method of least squares also test the hypothesis concerning the means and proportions of large size samples.*
6. *Identify and test the hypothesis problems on small size samples and goodness of fit and independence of attributes using chi-square distribution.*

1	2	3	4	5	6	7	8	9	10	11	12
H											M

Syllabus for B. Tech I Year II semester
Electronics and Computer Engineering
ENGINEERING GRAPHICS & DESIGN
(Common to CSE, ECM, IT & CE)

L	T	P/D	C
1	0	4	3

Code: 7BC02

Course objectives:

1: *To teach students the basic principles of Engineering graphics and instruments used*
2: *To introduce the concept of projections in drawing and its applications for simple drawing entities*
3: *To impart the knowledge of various types of solids and their projections in different position wrt principle planes*
4: *To teach the concept of sections of solids and their applications*
5: *To develop a clear understanding of the basic principles involved in three dimensional Engineering drawings.*
6: *To train the students for the extraction of multiple views from a solid model using AutoCAD*

Course outcomes: *After completing this course, the student will able to:*

1) *Get familiar to use the instruments to solve the engineering problem and draw various type of curves used in engineering*
2) *Understand and Implement Orthographic projections and draw projections of simple drawing entities such as points Lines, and Planes*
3) *Draw projections of different types of regular solids in various positions wrt principal planes of projection*
4) *Draw Sections of various Solids including Cylinders, cones, prisms and pyramids and draw the developments of these solids and their sections.*
5) *Construct Isometric Scale, Isometric Projections and Views and convert 3D views to 2D orthographic views*
6) *Understand from basic sketching through 2D and 3-D solid modeling using computer aided design (CAD) software*

UNIT – I

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

Curves used in Engineering Practice and their Constructions:

Conic Sections including Rectangular Hyperbola - General method, Cycloid, Epicyloid, and Involutes of circles.

UNIT – II

Orthographic Projection: Principles of Orthographic Projections – Conventions – First angle and third angle projections (however all drawing exercises must be in first angle only) - Projection of Points, Lines - Inclined to both planes, Projections of regular Plane, inclined planes - Auxiliary views.

UNIT –III

Projections of Regular Solids: Projections of Regular Solids: Prisms, Cylinders, Pyramids, Cones – Axis inclined to both planes, Auxiliary views.

UNIT –IV

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

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

UNIT – V

Isometric Projections/views: Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Lines, Plane, Simple Solids. Conversion of isometric views to orthographic views.

UNIT –VI

Overview of Computer Graphics : Demonstrating features of the CAD software - The Menu System, Toolbars, , Dialog boxes and windows, Drawing entities - lines, circles, arcs etc and editing commands, Dimensioning of objects,2D drawings-simple exercises , 3D wire-frame and shaded solids- Commands, Boolean operations.

Text/Reference Books:

(i) Bhatt N.D., Panchal V.M. & Ingle P.R., (2014), Engineering Drawing, Charotar Publishing House
(ii) Shah, M.B. & Rana B.C. (2008), Engineering Drawing and Computer Graphics, Pearson Education
(iii) Agrawal B. & Agrawal C. M. (2012), Engineering Graphics, TMH Publication
(iv) Narayana, K.L. & P Kannaiah (2008), Text book on Engineering Drawing, Scitech Publishers
(v) AUTOCAD Software Theory and User Manuals

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

Syllabus for B. Tech I Year II semester
Electronics and Computer Engineering
ENGLISH (Oral Communication Skills)
(Common to ECM, CSE, IT and Civil)

L	T	P/D	C
1	0	0	1

Code: 7HC02

Course Objectives ***:*** *The course will develop the students' ability to*

- *integrate listening and speaking skills*
- *communicate effectively*
- *speak effectively on a given topic*
- *master the art of presentation*
- *interact with peers in a group discussion*
- *get exposed to face interviews*

Course Outcomes ***:*** *After completing the course students will be able to*

- *understand, analyze and respond to the audience by listening effectively*
- *acquire the articulation of different types of sentences by practicing pause patterns and question tags.*
- *translate and demonstrate self, participate effectively in activities like JAM, extempore*
- *express and deliver a presentation on the given topic through role plays and situational dialogues*
- *implement English language to meet the standards of corporate and real world in a group.*
- *present and communicate effectively by facing mock interviews by experts from industry and academy.*

Unit-I : Listening Skills

1.1 Integrating Listening, Reading and Speaking
1.2 Introduction Integrated Speaking Skills

Unit-II: Oral Communication Skills -I

2.1 Types of Sentences – Assertive, Interrogative, Imperative and Exclamatory
2.2 Difference between Pauses, Gaps
2.3 Question Tags
2.4 Introduction and Greetings
2.5 Asking and Giving Directions

Unit-III: Oral Communication Skills -II

3.1 Speaking on a particular topic
3.2 Content development using cohesive devices
3.3 Common Errors in Spoken English

Unit-IV: Presentation skills

4.1 Introduction to Presentation Skills
4.2 Role Plays & Situational Dialogues

Unit-V : Group Discussion

5.1 Importance of Group Discussion
5.2 Do's and Don'ts of Group Discussion

Unit-VI: Interview Skills

6.1 Introduction to Interview Skills

6.2 Types of Interviews
6.3 Pre-Interview Preparation
6.4 Interview Etiquette (Non-Verbal)

Suggested Readings:

(i) Step by step learning language and life skills by Niruparani, Jayasree Mohanraj, Indira, Sailakshmi Pearson Publishers
(ii) Communication skills for technical students by TM Farhathullah, Orient Black swan Publications
(iii) English for technical Communication by K.R. Lakshmi Narayan , Scitech Publications
(iv) Practical English Usage. Michael Swan. OUP. 1995.
(v) Communication Skills. Sanjay Kumar and Pushp Lata. Oxford University Press. 2011.
(vi) Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press

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

Syllabus for B. Tech I Year II semester
Electronics and Computer Engineering
ENGINEERING PHYSICS LAB
(Common to CSE, IT and ECM)

L	T	P/D	C
0	0	3	1.5

Code: 7HC65

Course Objectives:

- *To study the concepts (numerical aperture) of a optical fiber,*
- *To explain about magnetic induction, Biot-Savart principle.*
- *To discuss the energy gap (E_g) of a semiconductor diode.*
- *To understand the rigidity modulus, periodicity.*
- *Understand the concept of photo electric effect using photo voltaic cell.*
- *To understand about the ionizing radiation by using the Geiger–Muller counter.*
- *Discuss the dispersive power of prism-minimum deviation method.*
- *Explain the formation of Newton's rings-interference*
- *Study the frequency of AC mains using Sonometer.*
- *To study the LED characteristics and forward resistance*
- *Explaining about the electrical resonance by using the LCR circuit*
- *To know the time constant of RC circuit*

List of Experiments

1. Determination of a Numerical Aperture (NA) of an optical fiber – Fiber optics .
2. Determination of magnetic induction flux density along the axis of a current carrying circular coil using Stewart and Gee's experiment - Magnetism.
3. Determination of the energy gap (E_g) of a given semiconductor-Temperature/semiconductor
4. Determination of rigidity modulus of a given wire material using the Torsional pendulum - Vibrations
5. Determination the Planck's constant using the photo voltaic cell - Photo voltaic cell
6. Studying the characteristics of Geiger–Muller counter and verifying the inverse square law - Nuclear physics
7. Calculation of dispersive power of a given material of prism by using Spectrometer in minimum deviation method - Light.
8. Determination of wavelength of a monochromatic light source by using Newton's rings experiment - Light
9. Calculating the frequency of AC supply by using the Sonometer – Electromagnetic/ Electrical
10. Studying the characteristics and calculating the forward resistance of a LED – Semiconductor/devices.
11. Study of series and parallel resonance of an LCR circuit – Electrical devices
12. Determination of time constant of an RC-circuit – Electrical/ Electronics

NOTE: Any **TEN** of the above experiments are to be conducted.

Course Outcomes:

After completing the experiment, students will be able to

- *Analyze the concepts of fiber optics, fundamentals, numerical aperture its importance, attenuation in fiber and applications.*
- *Understand and search to apply the fundamentals of magnetic induction, Ampere's law, Oersted's law and the Biot-Savart law.*
- *Analyze the concept a semiconductors, types, calculation of energy gap of a semiconductor diode and importance.*
- *Summarize the fundamentals of modulus-types, stress, strain, elasticity, plasticity and Hook's law.*
- *Understand the concepts of photo electric effect, importance, photo current, colour filters, optical sensors (photo voltaic cell).*
- *Understand the concept of radiation, ionizing radiation, radiological protection and inverse square law.*
- *Know about the light properties-dispersion, prism, spectrometer and minimum deviation arrangement.*
- *Understand the concepts of interference, conditions, formation of Newton's rings-reason.*
- *Know the difference between AC and DC fundamentals, magnetostriction, resonance, air column vibrations.*
- *Analyze the difference between normal diode, LED, forward bias, reverse bias, I-V characteristics, direct and indirect band gap semiconductors.*
- *Analyze the LCR circuit combination, parallel, series electrical resonance, inductance, reactance, capacitance and electrical and electronic fundamentals.*
- *Characterize the RC network, time constant, capacitor functioning and its application.*

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

Syllabus for B. Tech I Year II semester
Electronics and Computer Engineering
ELECTRICAL CIRCUITS AND NETWORK ANALYSIS LAB
(Common to EEE & ECM)

L	T	P/D	C
0	0	2	1

Code: 7AC61

Course Objectives: To make the student to learn

i. *Verification of network theorems experimentally.*
ii. *To measure frequency of RLC series and parallel circuits under resonance*
iii. *To determine self & mutual inductance and co-efficient of coupling for coupled circuits*
iv. *The construction of current locus diagram for a given parallel circuit.*
v. *Simulation for analysis of electrical networks*
vi. *Method for determining the parameters of a coil*

Course Outcomes: At the end of the course, students will be able to

i. *Perform the test for verification of various network theorems*
ii. *Measure the frequency for a RLC series/parallel circuits under resonance.*
iii. *Conduct an experiment for determination of self & mutual inductance and coefficient of coupling*
iv. *Construct current locus diagram by performing a test on single phase parallel circuits*
v. *Simulate for analysis of electrical circuits.*
vi. *Determine the parameters of the coil*

List of Experiments

1. Verification Thevenin's Theorem and Norton's Theorem
2. Verification of Maximum Power Transfer Theorem
3. Verification of Superposition Theorem
4. Verification of Compensation Theorem
5. Verification of Reciprocity Theorem and Millmann's Theorem
6. Finding resonant frequency in Series and Parallel circuits
7. Determination of Self Inductance, Mutual Inductance and Coefficient of coupling
8. Calculation of Z and Y Parameters
9. Construction of current locus diagram for RL and RC circuit
10. Mesh and Nodal Analysis by simulation
11. Determination of Average value and RMS value of a complex wave
12. Determination of parameters of a coil.
13. Determination of Time constant of RL and RC series circuit.

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

Syllabus for B. Tech I Year II semester
Electronics and Computer Engineering
ENGLISH LAB (Oral Communication Skills)
(Common to ECM, CSE, IT and Civil)

L	T	P/D	C
0	0	2	1

Code: 7HC62

Course Objectives *: The course will develop the students' ability to*
- *integrate listening and speaking skills*
- *communicate effectively*
- *speak effectively on a given topic*
- *master the art of presentation*
- *interact with peers in a group discussion*
- *get exposed to face interviews*

Course Outcomes *: After completing the course students will be able to*
- *understand, analyze and respond to the audience by listening effectively*
- *acquire the articulation of different types of sentences by practicing pause patterns and question tags.*
- *translate and demonstrate self, participate effectively in activities like JAM, extempore*
- *express and deliver a presentation on the given topic through role plays and situational dialogues*
- *implement English language to meet the standards of corporate and real world in a group.*
- *present and communicate effectively by facing mock interviews by experts from industry and academy.*

Unit-I : Practice sessions on
Listen & Speak
Listen, Read, and Speak

Unit-II: Practice sessions on
Articulation of types of Sentences
Question Tags
Introduction and greeting
Asking for and Giving
Directions

Unit-III: Practice sessions on
JAM/Extempore/
Impromptu
Prepared talk on given topics

Unit-IV: Practice sessions on
Formal Presentation
Role Plays & Situational Dialogues

Unit-V: Practice sessions on
Group Discussion

Unit-VI: Practice sessions on
Mock Interviews

Suggested Readings:

(i) Step by step learning language and life skills by Niruparani, Jayasree Mohanraj, Indira, Sailakshmi Pearson Publishers
(ii) Communication skills for technical students by TM Farhathullah, Orient Black swan Publications
(iii) English for technical Communication by K.R. Lakshmi Narayan , Scitech Publications
(iv) Practical English Usage. Michael Swan. OUP. 1995.
(v) Communication Skills. Sanjay Kumar and Pushp Lata. Oxford University Press. 2011.
(vi) Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press

Syllabus for B. Tech I Year II semester
Electronics and Computer Engineering
TECHNICAL SEMINAR - II

Code: 7D292

L	T	P/D	C
0	0	2	1

Course Objective :

Develop ability to be a public speaker. Learn the importance of delivering seminars for demonstrating oratory and develop interview facing skills.

Course Outcomes: *After completing this course, the student will be able to*

1. *Identify current general, political and technology related topics.*
2. *Arrange and present seminar in a effective manner*
3. *Collect, survey and organize content in presentable manner*
4. *Demonstrate oratory skills with the aid of Power Point Presentations*
5. *Exhibit interview facing skills and team leading qualities*

Procedure

1. Seminar in-charges shall highlight the significance of technical seminar in the first two sessions and enlighten the students on the utility of these seminars.
2. The slots, titles shall be decided upfront and seminar in charge shall take signatures.
3. The same sheet shall be affixed in the respective classrooms and seminar register.
4. If any student fails to present his/her seminar on the given slot, to genuine reasons, they may be asked to present in the subsequent slot/week.
5. Progress of the seminars need to be reviewed by the concerned HOD once in 15 days.
6. The evaluation for technical seminars has to be informed to students and displayed in the classrooms.
7. Report and presentation must contain topic, introduction, explanation, diagrams, tables, applications and conclusions.

Distribution of marks

There shall be a Technical Paper writing and seminar evaluated for 100 marks in First Year First Semester. The evaluation is purely internal and will be conducted as follows:

Literature survey, topic and Content	: 10 marks
Presentation including PPT	: 15 marks
Seminar Notes	: 10 marks
Interaction	: 5 marks
Report	: 10 marks
Attendance in the seminar class	: 10 marks
Punctuality in giving seminar as per schedule time and date	: 10 marks
Mid semester viva (on the seminar topics completed up to the end of 9^{th} week	: 10 marks
End semester Viva	: 20 marks
Total	**100 Marks**

1	2	3	4	5	6	7	8	9	10	11	12
	x	x									

Syllabus for B. Tech II Year I semester
Electronics and Computer Engineering
DATA STRUCTURES
(Common to all Branches)

Code: 7EC01

L	T	P/D	C
2	1	0	3

Course Objective:

1. *Understand the concepts of Abstract data Type, linear data structures such as stacks, queues and lists and their applications.*
2. *Comprehend different non linear data structures such as trees and graphs and analyze their time complexities.*
3. *Understand object oriented programming and advanced C++ concepts and be able to write programs with C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, Templates etc.*

Course Outcomes:

1 Explain Abstract data type, stack and Queues with their applications
2 Write programs on Singly linked lists, Doubly linked lists, Circular list and explain their operations.
3 Explain concepts of Trees, AVL Trees and Graphs with examples and applications.
4 Describe and solve problems of searching and sorting and evaluate the time complexity of each algorithm.
5 Explain concepts of OOPs and implement programs using objects, classes, constructors and destructors.
6 Explain and apply concepts of oops, write programs implementing functions, operator overloading and inheritance.

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

UNIT II
Singly linked lists, Advantages of Linked lists over Arrays, Doubly linked lists, Circular list and their operations, representing stacks and queues with Linked lists.

UNIT III
Trees- Binary trees, terminology, representation, traversals. AVL trees, AVL tree operations: Insertion, deletion and searching. Graphs- terminology, representation, graph traversals (DFS and BFS).

UNIT IV
Searching - Linear and binary search methods. Sorting - Bubble sort, Selection sort, Insertion sort, Quick sort, Merge sort. Heaps - Introduction, Min Heap, Max Heap,Operations on Heaps, Heap Sort.
Performance analysis of Searching and Sorting Algorithms.

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

UNIT VI: Static class members, this pointer, friend functions, Dynamic memory management with operators new and delete. Overloading-function overloading, Operator overloading, restrictions on

operator overloading, overloading unary and binary operators, templates, inheritance: single, multiple and multi level inheritance.

TEXT BOOKS:

1. Data Structures and C++ by Reema Thareja
2. Data Structure through C by Yashavant Kanetkar.
3. 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
4. Data Structures, A pseudocode Approach with C by Richard F. Gilberg and Behrouz A. Forouzan.

Syllabus for B. Tech II Year I semester
Electronics and Computer Engineering
DISCRETE STRUCTURES AND GRAPH THEORY

Code: 7D301

L	T	P/D	C
3	0	0	3

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

Course Objectives: *In this course the student will learn*

- *Statements and their truth value and constructing truth tables*
- *The use of Universal and Existential quantifiers to describe predicates*
- *Different algebraic structures and their use in mathematics.*
- *To solve problems by permutations and combinations. Study of pigeonhole principle and inclusion exclusion principles.*
- *To solve various recurrence relations by using different techniques.*
- *The basics of graph theory, different ways of traversing the graph and different types of graphs and circuits*

Course Outcomes: *After completing this course, student should be able to*

1 *Describe Connectives, Normal Forms and Theory of Inference with suitable examples.*
2 *Solve problems with Predicate Calculus and generate inferences.*
3 *Solve and explain Relations and Ordering problems and solve problems of Lattices.*
4 *Distinguish algebraic systems like semi-groups, monoids and groups and apply concepts of Combinatorics for solving problems*
5 *Solve problems with recurrence relations.*
6 *Explain and apply concepts of Euler's Formula, Multigraphs, Euler's Circuits, Hamiltonian graph and Chromatic Numbers for solving problems.*

UNIT – I

Propositional Logic: Statement and notations, Connectives, Well formed Formulas, Truth Tables, Tautology, Equivalence, Implication,Arguments, Normal forms, Proof by contradiction,Conditional Proof
Applications: Useful in Switching theory and logic design, Digital Logic design

UNIT-II

First order logic: Predicates,Quantifiers, Free and Bound variables, Rules of inference, Consistency, Automatic Theorem Proving.
Applications: Useful for Artificial Intelligence

UNIT – III

Relations: Properties of Binary Relations, Equivalence,transitive closure, Compatibility & Partial Ordering Relations, Hasse Diagrams,lattices,Boolean algebra. Functions: Inverse function, composition of functions, Recursive functions, Lattice and its properties.
Algebraic structures: Algebraic systems, Examples and general properties, Semi groups and Monoids. Groups, Subgroups, Homomorphisms, Isomorphisms
Applications: Useful for writing queries DataBase Management systems, Computer Networks.

UNIT –IV

Elementary Combinatorics: Basics of counting,Combinations & Permutations with and without repetitions, Constrained repetitions. Binomial coefficients, Binomial, Multinomial theorms, Euler function, Derangemants, Principle of inclusion and exclusion, Pigeon hole principle and its applications.
Applications: Useful for Computer Networks, Machine Learning,Data Mining, Theory of Computations

UNIT V

Recurrence relations: Generating functions. Function of sequences, Calculating the coefficient of generating functions. Recurrence relations, Solving recurrence relations by substitution and generating functions. Characteristic roots. Solution of Inhomogeneous recurrence relations.

Applications: Useful and Can improve the Computer Programming skills

UNIT VI

Graph Theory: Basic concepts**,** Representation of Graph, DFS, BFS, Spanning trees, Planar graphs, coloring, Isomorphism and subgraphs, Multi graphs and Euler Circuits, Hamiltonian graphs, Chromatic numbers,connectivity,cut vertices,cut edges,Matchinga and coverings,independent sets.

Applications: Design of Algorithms, Computer Networks

TEXT BOOKS :

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

REFERENCES :

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

Syllabus for B. Tech II Year I semester
Electronics and Computer Engineering
ELECTRONIC DEVICES AND CIRCUITS
(Common to ECE/EEE/ECM)

Code: 7C301

L	T	P/D	C
3	0	0	3

Course Objectives:
The objective of this course is to provide the learners with a comprehensive understanding of electronic devices, circuits and their applications.

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

1. *Learning the operation of diode and its application as rectifier and filters*
2. *Understand the Fundamentals of BJT operation, Characteristics ,different biasing circuits, analysis of BJT amplifiers.*
3. *Analyze and Design of BJT Single stage, multistage amplifiers at low and high frequencies.*
4. *Analysis of small signal model of FET and frequency response*
5. *Design different types of Feedback Amplifier, Oscillators and their analysis*
6. *Understand the Basic regulator circuits and voltage multipliers.*

Mapping of Course Outcomes with Program Outcomes

	a	b	c	d	e	f	g	h	i	j	k	l	m
CO1	3	2	2	2								2	3
CO2	3	2	2	2								2	3
CO3	3	2	2	2								2	3
CO4	3	2	2	2								2	3
CO5	3	2	2	2								2	3
CO6	3	2	2	2								2	3

UNIT-I
PN JUNCTION DIODE:
P-N junction diode under forward & reverse bias. Transition capacitance and Diffusion capacitance. Break down of junctions (Avalanche and Zener Break down). Zener Diode Characteristics.
Applications: Half wave Rectifier, Full wave Rectifier, Bridge Rectifier: Analysis. Problems based on rectifiers. Introduction to power supply filters.(L,C and π filters)

UNIT- II BIPOLAR JUNCTION TRANSISTOR:
Fundamentals of BJT& Operation, Minority carrier profiles. I/P and O/P Characteristics CB, CE and CC configurations. Transistor as a switch. Switching characteristics (Rise time, Fall time, Delay Time and Storage time), Design of transistor as switch. Problems on transistor switch. BJT Biasing Methods & Stabilization. - Fixed Bias, Collector to Base Bias, Voltage Divider Bias and Problems, Concept of Thermal runway in BJTs.

UNIT-III
Small signal & High frequency analysis of BJT:
Small signal Model of BJT, h-parameter representation – Exact analysis of .CE Amplifier-. Approximate analysis of CE, CB and CC Amplifiers.
BJT hybrid π model. – relationship between high frequency parameters and h- parameters, β cut off Frequency (common Emitter short circuit Current gain), Millers Theorem, Concept of Multistage amplifier - N-stage cascaded amplifier, equivalent circuits, Darlington pair(high input resistance transistor circuits), Cascode (CE+CB) amplifier, Frequency response of single & two stage RC coupled Amplifier, Analysis at Low and High frequencies.

UNIT-IV

FIELD EFFECT TRANSISTOR:

Construction & Working of JFET, JFET characteristics, FET Parameters, Construction & Working of MOSFET, MOSFET characteristics, (Enhancement and depletion mode); Comparison of JFET & MOSFET

Biasing of JFET - Self bias and fixed bias. Small signal Analysis of common source, common drain and common gate amplifier configurations

UNIT- V

FEED BACK AMPLIFIERS

Fundamentals-classification- Characteristics of feedback Amplifier effect of feedback in voltage series, voltage shunt, current series and current shunt amplifiers. Problems

OSCILLATORS

Classification of Oscillators. Condition for Oscillations. RC Phase shift Oscillator, Wein bridge oscillator- Hartley oscillator, Colpitts oscillator, Quartz crystal Oscillator,

UNIT-VI

VOLTAGE REGULATORS:

Classification of Voltage Regulators - Basic regulator circuit: Zener, Transistor Based: Shunt and Series Voltage regulators. Protection Circuits: Current limiting, Short circuit protection. Specifications of Voltage regulator, Voltage multipliers. Switching Regulators – (boost up, step down (buck) & Flyback)

TEXT BOOKS:

1. Electronic Devices and Crcuits-J.Millman, C.C.Halkias and satyabratha jit Tata McGraw Hill,2 Ed. 2007
2. Electronic Devices AND Circuits-R.L.Boylestad &Louis Nashelsky, Pearson/Prentice Hall, 9th edition, 2006.
3. Electronic devices and Circuit Theory-Robert L. Boylstead, Louis Nashelsky, 9ht ed., 2008, PE
4. Integrated electronics-J.Milliman and C.C.Halkias, MC Graw –Hill-1972

REFERENCES:

1. Electronic circuit analysis-K.Lal Kisshore,2004,BSP
2. 2.Electronic Devices and Circuits – K.LalKishore, 2 ed., 2005, BSP
3. 3.Electronic Devices: Systems and Applications – Robert Diffenderter, 2nd Indian Reprint., 2010, Cengage Learning
4. Electronic Devices and Crcuits by Sanjeev Guptha,Dhapat Rai Publications.
5. Electronic Devices and Circuits by S.Salivahanan and N.Suresh Kumar, Tata Mc Graw Hill Publications
6. Electronic Circuits and Applications, Muhammad H Rashid, Cengage Learning

Syllabus for B. Tech II Year I semester
Electronics and Computer Engineering
DIGITAL LOGIC DESIGN
(Common to ECE/EEE/ECM)

Code: 7C302

L	T	P/D	C
3	0	0	3

Course objectives: *To learn the different numbering systems, Boolean functions and design of Combinational and Sequential Circuits.*

Course outcomes:

After completing this course, the students will have demonstrated

i. *an ability to understand number systems and apply the rules of Boolean algebra to simplify Boolean expressions.*
ii. *an ability to simplify of Boolean expressions using K-map.*
iii. *an ability to design MSI combinational circuits such as full adders, multiplexers, decoders, encoders. Code converters.*
iv. *an ability to design basic memory units (latches and flip-flops) and sequential circuits such as counters and registers*
v. *an ability to design digital design using PLD's such as ROM's, PLA's, PAL s.*
vi. *an ability to design digital controllers using Algorithmic State Machine Charts .*

Mapping of Course Outcomes with Program Outcomes

	a	b	c	d	e	f	g	h	i	j	k	L	m
CO1	3	2	2	2								2	3
CO2	3	2	2	2								2	3
CO3	3	2	2	2								2	3
CO4	3	2	2	2								2	3
CO5	3	2	2	2								2	3
CO6	3	2	2	2								2	3

UNIT – I

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

Boolean Algebra: Axiomatic definition of Boolean algebra, Binary operators, postulates of and theorems. Boolean addition, subtraction, 1's complement, 2's complement. Switching functions, Canonical forms and Standard forms, Simplification of switching functions using theorems.

UNIT – II

Logic gates: Basic gates and universal gates.

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

Application: Design of a Basic Calculator Using Logic Gates.

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, Concepts of threshold logic and threshold gates.

Applications: Application of Decoder in Seven Segment Display, application of Encoders in Servomotors.

UNIT - IV

Sequential Circuits-1: Classification of sequential circuits (Synchronous, Asynchronous Pulse mode, and Level mode with examples). Basic flip-flops-Triggering and excitation tables. Conversion of flip-flops.
Applications: Application of SR Flip Flop in Switch Debounce Circuit.

UNIT - V

Sequential Circuits-2: The sequential circuit model, Asynchronous counters, Design of simple synchronous sequential circuits such as counters (Design of modulo-N counter, Ring counter, twisted ring counter) and Shift registers
Applications: Design of 1010 sequence detector, Design of Digital Clock using Counters

UNIT - VI

Programmable Logic Devices: Basic PLD's-ROM, PROM, PLA, and PLD Realization of Switching functions using PLDs. Algorithmic State Machines: State machines and state diagrams.
Applications: Design of a Weighing machine and Binary multiplier.

TEXT BOOKS:

1. Morris Mano-,Digital design –PHI, 2nd Edition.
2. ZviKohavi and Niraj K Jha -Switching & Finite Automata theory – Cambridge, 3rd Edition.
3. SubrataGhoshal, Digital Electronics,2012, Cengage Learning

REFERENCES:

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

Syllabus for B. Tech II Year I semester
Electronics and Computer Engineering
SIGNALS AND SYSTEMS
(Common to ECE / ECM)

Code: 7C303

L	T	P/D	C
3	0	0	3

Course Objectives :
To study the concepts of signals and systems their characterization in the Time as well as frequency domains

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

i. *Understand the concepts of signals, comparison of signals, orthogonal signal space and the concepts of impulse, step and signum functions.*
ii. *Apply the orthogonality properties to understand the Fourier methods of signal analysis- Fouries series and Fourier Transforms.*
iii. *Understand the concepts of systems, their characterization in the Time as well as Transformed domains.*
iv. *Understand and apply the mathematical tools, such as Convolution, Correlation and the Laplace transform, to analyze signals and systems.*
v. *Determine the sampling frequency for any low pass and band pass signals applying the sampling theorem.*
vi. *Distinguish between continuous and Discrete time signals and systems. Apply the concepts of Z-Transforms in the analysis of DT signals and systems.*

Mapping of Course Outcomes with Program Outcomes

	a	b	c	d	e	f	g	h	i	j	k	L	m
CO1	3		2	3	3				3	3		2	3
CO2	3		2	3	3				3	3		2	3
CO3	3		2	3	3				3	3		2	3
CO4	3		2	3	3				3	3		2	3
CO5	3		2	3	3				3	3		2	3
CO6	3		2	3	3				3	3		2	3
Overall	3		**2**	**3**	**3**				**3**	**3**		**2**	**3**

UNIT I
Signals: Signals. Classification of Signals. Even, Odd, Periodic. Non-periodic. Energy and Power Signals. Exponential and Sinusoidal Signals. Concepts of Impulse Function. Unit Step Function. Signum Function.
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.
Applications: The concepts of orthogonality find applications in DSP, DIP, DC, Design of experiments and so on.

UNIT-II
Fourier Representation of Continuous Time Signals
Periodic Signals- Fourier Series, Dirichlet's Conditions. Trigonometric. Exponential Fourier series. Fourier Spectrum.
Non- Periodic Signals - Fourier Transforms. Fourier Transform of Arbitrary Signal. Standard Signals. Fourier Transform of Periodic Signals. Properties of Fourier Transforms. Fourier Transforms Involving Impulse and Signum Function Energy Density Spectrum, Parseval's Theorem. Introduction to Hilbert Transform.
Applications: Knowledge of signal bandwidth is necessary in the design of a filter; in the determination of the carrier frequency and also the sampling frequency and analog communication.

UNIT-III

Signal Transmission through Linear Systems

Systems. Classification of 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.

Applications: The concept of system bandwidth is applied in the design of a practical filter or system.

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... Relation between Convolution and Correlation. Detection of periodic signals in the presence of Noise by Auto and Cross Correlations.

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. Initial and final value theorems, Relation between LT and FT of a Signal. Laplace Transform of Certain Signals using Waveform Synthesis. Laplace Transform of Periodic Signals.

Applications: These math tools are required in the design, analysis and implementation of various filters, LT signals and systems .

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.

Applications: Sampling techniques are applied in the conversion of analog to digital conversion

UNIT-VI

Z–Transforms

Fundamental Difference between Continuous and Discrete Time Signals. Discrete Time Signal Representation using Complex Exponential and Sinusoidal Components. Periodicity of Discrete Time using Complex Exponential Signal. Concept of Z- Transform of a Discrete Sequence. Distinction Between Laplace, Fourier and Z Transforms. Region of Convergence in Z-Transform. Constraints on ROC for Various Classes of Signals. Inverse Z-Transform. Properties of Z-Transforms. Initial and final value theorems. Introduction to Discrete Time Systems.

Applications: Analysis and Synthesis of DT signals and systems.

TEXT BOOKS

1. Signals, Systems and Communications- B. P. Lathi, BSP.
2. Signal processing and Linear Syustems - B. P. Lathi, BSP.
3. Signals and Systems – Anand Kumar

REFERENCES

1. Signals & Systems – Simon Haykin and Van Veen,Wiley, 2nd Edition.
2. A.V. Oppenheim, A.S. Willsky and S.H. Nawab, PHI, 2ndEdn.
3. Linear Systems and Signal Processing - B. P. Lathi, Oxford University Publications.

1	2	3	4	5	6	7	8	9	10	11	12
										x	

Syllabus for B. Tech II Year I semester
Electronics and Computer Engineering
MANAGEMENT SCIENCE AND FINANCIAL ACCOUNTING (MSFA)

Code: 7ZC01

L	T	P/D	C
2	0	0	2

Course Objective: *To make students understand the basics of management and Financial Accounting, its principles, practices and latest concepts for increasing the performance of engineering graduates in their respective fields, which facilitate them in making better planning and decisions*

Course Outcomes:

1. *Outlines the significance of management, defines the basic concepts and applicability of management principles in changing paradigms.*
2. *Helps in understanding organization behavior, personality determinants and other key aspects*
3. *Infers the need to understand the importance of Strategic management and Business environment in particular*
4. *Enrich students with basic concepts of Financial Accounting.*
5. *Understand basic concepts of Depreciation and need for preparing trial balance.*
6. *Helps in preparation of Financial Statements (final accounts).*

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; Controlling: Basic control process- Fayol's principles of Management - Taylor's principles of scientific management- Maslow's Motivational theory.

UNIT II

INTRODUCTION TO ORGANIZATIONAL BEHAVIOR: Definition, Nature and Scope of OB, Personality-determinants of Personality – Perception- Attitudes- Attribution theory- Johari Window and Transactional Analysis, Stress Management- factors and remedies

UNIT III

STRATEGIC MANAGEMENT: Introduction to Strategic Management, Vision, Mission, Goals, Objectives, Environmental Scanning- PESTEL, SWOT Analysis, Competitive Advantage, Concept of Core Competence, PORTER's five force model, types of strategies, Strategic formulation and Implementation.

UNIT IV

FUNDAMENTALS OF FINANCIAL ACCOUNTING: Definition of Accounting, Accounting Concepts and conventions, principles of Double-Entry system, Book Keeping, Overview of books of original records Journal, Ledger and Subsidiary books

UNIT V

TRIAL BALANCE AND DEPRECIATION OF FIXED ASSETS: Significance of Trial balance, Preparation of trial balance Definition of Depreciation, Depreciation of fixed assets, Methods of Depreciation – Straight line method and Diminishing Balance method

UNIT VI

CLASSIFICATION OF REVENUE AND CAPITAL EXPENSES, AND PREPARATION OF FINAL ACCOUNTS: Revenue expenditure, Capital expenditure, Preparation of Final Accounts - Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments

REFERENCES:

- A R Aryasri: Management Science, Tata Mc Graw Hill
- Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi
- A R Aryasri: Managerial Economics and Financial Analysis, Tata Mc Graw Hill

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x											

Syllabus for B. Tech II Year I semester
Electronics and Computer Engineering
DATA STRUCTURE LAB (C, C++)
(Common to all Branches)

Code: 7EC71

L	T	P/D	C
0	0	3	1

Course objective:
Understand the data structures: simple and complex and use them to write the programs for implementing searching, sorting, expression evaluations. Understand the applications that use the particular data structure and its significance in the development of operating systems and the softwares . Understand the object oriented programming concepts of C++.

Course Outcomes:
1 Write programs to implement Stacks, Queues and circular queues.
2 Write programs using tree traversals. Inorder, preorder and post order.
3 Write Programs on searching and sorting operations.
4 Write programs on Binary trees.
5 Write programs in C++ to implement classes and operator overloading.

List of Prorams:
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 implement Circular Queue and its operations using arrays.
4. Write a C program that uses Stack operations to perform the following
   i) Converting infix expression into postfix expression
   ii) Evaluating the postfix expression
5. Write a C program that uses functions to perform the following operations on singly linked list:
   i) Creation ii) Insertion iii) Deletion iv) Traversal
6. Write a C program using functions to perform the following operations on circular singly linked list:
   i) Creation ii) Insertion iii) Deletion iv) Traversal
7. 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
8. Write a C program to implement operations on the following Data Structures Using Singly linked list:
   i) Stack ii) Queue
9. Write a C program that uses functions to perform the following:
   i) Creating a Binary Tree of integers
   ii) Traversing the above binary tree in preorder, in order and post order.
10. 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
11. Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
    i) Bubble sort ii) Insertion sort iii) Selection Sort
12. Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
    i) Quick sort ii) Merge sort iii) Heap Sort
13. Write a C++ program to read and display the details of student class with data members as name, rollno and 3 subjects' marks.

14. Write a C++ program to implement all types of constructors.
15. Write a C++ program to implement operator overloading for addition of two complex numbers.

TEXT BOOKS:

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

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

ELECTRONIC DEVICES & CIRCUITS LAB

(Common to ECE / ECM / EEE)

Code: 7C371

L	T	P/D	C
0	0	3	1

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

PART A: Electronic Workshop Practice (in 3 lab sessions):

1. Identification, Specifications, Testing of R, L, C Components (Colour Codes), Potentiometers, Bread Boards.
2. Identification and Specifications of Active Devices like Diodes, BJTs, JFETs, MOSFETs.
3. Study and operation of
   - Multimeters (Analog and Digital)
   - Function Generator
   - Regulated Power Supplies

PART B: (For Laboratory examination – Minimum of 10 experiments)

1. Study and Operation of CRO:
   Oscilloscope, CRT features, vertical amplifiers, horizontal deflection system, sweep, triggerPulse, delay line, sync selector circuits, Dual trace oscilloscope, standard specifications of CRO, probes for CRO, Measurement of amplitude and frequency. Time Period measurement, Lissajous patterns.
2. PN Junction diode characteristics A. Forward bias B. Reverse bias.
3. Zener diode characteristics
4. Transistor CB characteristics (Input and Output)
5. Transistor CE characteristics (Input and Output)
6. Half wave Rectifier with and without filters.
7. Full wave Rectifier (Centre tapped and Bridge)with and without filters
8. FET characteristics
9. CE Amplifier
10. CC Amplifier (Emitter Follower).
11. FET amplifier (Common Source)
12. RC Phase Shift Oscillator

Syllabus for B. Tech II Year I semester
Electronics and Computer Engineering
IT WORKSHOP
(Common to all branches)

Code: 7FC74

L	T	P/D	C
0	0	2	1

Course Outcomes:

1 *Identify peripherals of a computer, describe types of Operating System, Install computer with dual bootoperating systems.*
2 *Assembling and Disassemble system.*
3 *Install and use Microsoft Windows 7 for programming and application development .*
4 *Install linux and install applications in Linux and windows.*
5 *Trouble Software and hardware problems along with setting configurations for computer security settings and application software of the system.*
6 *Describe Cyber ethics.*

Introduction & Description of exercises, processes and procedures with PPT

Week1:

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

Week 2: Assembling and Disassembling Practicals

Week 3:

Introduction to Microsoft Windows 7: Software and data, Components of Desktop, Working with windows

Week 4:

Getting Started with Microsoft Windows 7: Using the Start Menu, Obtaining Help on Windows, Changing Setting, Using Applications in Windows, Shutting Down Windows

Week 5:

Introduction to Linux Operating system**,** Linux Commands, DOS commands

Week 6:

Install computer applications in Linux and windows.

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

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

TEXT BOOK:

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

Syllabus for B. Tech II Year I semester
Electronics and Computer Engineering
TECHNICAL SEMINAR - III
(Common to all branches)

Code: 7D393

L	T	P/D	C
0	0	2	1

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

Course Objective :

Develop ability to be a public speaker. Learn the importance of delivering seminars for demonstrating oratory and develop interview facing skills.

Course Outcomes: *After completing this course, the student will be able to*

1. *Identify current general, political and technology related topics.*
2. *Arrange and present seminar in a effective manner*
3. *Collect, survey and organize content in presentable manner*
4. *Demonstrate oratory skills with the aid of Power Point Presentations*
5. *Exhibit interview facing skills and team leading qualities*

Procedure

1. Seminar in-charges shall highlight the significance of technical seminar in the first two sessions and enlighten the students on the utility of these seminars.
2. The slots, titles shall be decided upfront and seminar in charge shall take signatures.
3. The same sheet shall be affixed in the respective classrooms and seminar register.
4. If any student fails to present his/her seminar on the given slot, to genuine reasons, they may be asked to present in the subsequent slot/week.
5. Progress of the seminars need to be reviewed by the concerned HOD once in 15 days.
6. The evaluation for technical seminars has to be informed to students and displayed in the classrooms.
7. Report and presentation must contain topic, introduction, explanation, diagrams, tables, applications and conclusions.

Distribution of marks

There shall be a Technical Paper writing and seminar evaluated for 100 marks in First Year First Semester. The evaluation is purely internal and will be conducted as follows:

Literature survey, topic and Content	: 10 marks
Presentation including PPT	: 15 marks
Seminar Notes	: 10 marks
Interaction	: 5 marks
Report	: 10 marks
Attendance in the seminar class	: 10 marks
Punctuality in giving seminar as per schedule time and date	: 10 marks
Mid semester viva (on the seminar topics completed up to the end of 9th week	: 10 marks
End semester Viva	: 20 marks
Total	**100 Marks**

Syllabus for B. Tech II Year II semester
Electronics and Computer Engineering
Mathematics – II (Differential Calculus)
(Common to CSE, IT, ECM)

Code: 7HC16

L	T	P/D	C
2	0	0	2

***Pre Requisites**: Mathematics-1*

Courses Objectives: *The students are expected to learn*

- *To find the maxima and minima for functions of two variable functions*
- *Various methods to the find roots of an equation.*
- *Various analytical methods to solve first order first degree and also the equations not of first degree ordinary differential equations.*
- *Methods to solve higher order ordinary differential equations.*
- *Concept of finite differences and to estimate the value for the given data using interpolation.*
- *Solving ordinary differential equations using numerical techniques.*
- *Concept, properties of Laplace transforms*

Syllabus

Unit I: Multi Variable Calculus: (10 L)
Limit, Continuity and Partial Differentiation, total derivative: Jacobian Transformation, Functional Dependence, Maxima and minima for two variable functions.

Unit II: First order ordinary differential equations: (8 L)
Exact, equations reduced to exact; linear and Bernoulli's equations, Newton's Law of Cooling, Law of natural Growth/Decay. Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

Unit III: Ordinary Differential equations of higher order: (10 L)
Higher order linear differential equations with constant coefficients-Standard types of finding P.I, method of variation of parameters, Cauchy-Euler equation.

Unit IV: Numerical Methods – I: (10 L)
Solution of Algebraic and Transcendental equations- Bisection method, Newton-Raphson Method. Finite differences- Newton's formulae for interpolation, Lagrange's Interpolation formula for unevenly spaced points, Numerical Differentiation - Newton's formulae. (without proofs)

Unit V: Numerical Methods – II: (10 L)
Numerical solutions to first order ordinary differential equations – Taylor's series method, Euler's method, Picard's method, Runge-Kutta method of fourth order.

Unit VI: Laplace Transformations: (12 L)
Laplace transform of standard functions, shifting theorems, change of scale property, Laplace Transform of Derivatives and Integrals, Multiplication by powers of 't', Divison by 't' (without proofs). Laplace transform of unit step function, Impulse function. Inverse Laplace transforms**:** properties, partial fraction method and convolution theorem (without proof).

TEXT BOOKS

(i) B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000.
(ii) Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

REFERENCE BOOKS

(i) Advanced Engineering Mathematics, S.R.K. Iyengar and R.K.Jain, Narosa Publication.
(ii) S. S. Sastry, Introductory methods of numerical analysis. PHI, 4th Edition, 2005.
(iii) G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
(iv) Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008.
(v) Engineering Mathematics, Ravish R. Singh, McGraw Hill Education

Course outcomes: *After learning the contents of this paper the student must be able to*

- *Evaluate the maxima and minima for functions of two variable functions*
- *Find the solutions of first order first degree and not of first degree differential equations and their applications such as Newton's law of cooling, Natural growth and decay.*
- *Identify and solve higher order ordinary differential equations with constant coefficients using some standard methods*
- *Find the root of a given equation.*
- *Estimate the value for the given data using interpolation*
- *Find the numerical solutions for a given ODE's*
- *Use the Laplace transforms techniques for solving ODE's*

1	2	3	4	5	6	7	8	9	10	11	12
	x										

Syllabus for B. Tech II Year II semester
Electronics and Computer Engineering
OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(Common to CSE, IT and ECM)

Code: 7EC02

L	T	P/D	C
3	0	0	3

Course Objective :
Understand the concepts of Object oriented programming principles of Java. Write the programs and execute using OOP principles such as garbage collection, overloading methods, constructors, recursion, string handling, StringTokenizer, inheritance and its types, packages, multithreading and threads.

Course Outcomes:
At the end of this course, the student will be able to
1 *Describe fundamentals of JAVA, its Classes, and Objects and write simple programs using constructors.*
2 *Explain Write simple programs using inheritance, interface and packages.*
3 *Explain and write programs using Packages, I/O Stream and collections.*
4 *Describe and write programs to implement Exception handling and Multithreading.*
5 *Describe and write programs using AWT, Swings and develop applications using event handling.*
6 *Describe and develop applications using Applets and develop client server programs using networking concepts.*

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, StringTokenizer.
Applications: Basic operations on the bank account of a customer.

UNIT II
Inheritance –Definition, single inheritance, benefits of inheritance, Member access rules, super class, polymorphism- method overriding, Dynamic method dispatch, using final with inheritance, abstract classes, Base class object.
Interfaces: definition, variables and methods in interfaces, differences between classes and interfaces, usage of implements and extends keyword, interfaces, uses of interfaces, packages
Applications: Extending the banking operations to the loan applicants.

UNIT III
Packages: Definition, types of packages, Creating and importing a user defined package.
Introduction to I/O programming: DataInputStream, DataOutputStream, FileInputStream, FileOutputStream, BufferedReader.
Collections: interfaces, Implementation classes, and Algorithms (such as sorting and searching).
Applications: Searching for a string in the text. PNR status check, students' result sorting.

UNIT IV
Exception handling -exception definition, benefits of exception handling, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes.
Multi-Threading:-Thread definition, types of multitasking, uses of multitasking, thread life cycle, creating threads using Thread class and Runnable interface, synchronizing threads, daemon thread.
Applications : Illegal entry handling in the registration form. (Example: entering incorrect intermediate hall-ticket number in EAMCET Registration form)

UNIT V

Advantages of GUI over CUI ,The AWT class hierarchy, Introduction to Swings, Swings Elements:- JComponent, JFrame, user interface components- JLabels, JButton, JScrollbars, text components, check box, check box groups, choices, lists panels – scrollpane, menubar, graphics, layout, managers –boarder, grid, flow, card and grid bag.

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

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

UNIT VI

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

Applications: Developing of simple advertisements.

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

Applications: One to one Chat application

TEXT BOOKS:

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

REFERENCES:

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

Syllabus for B. Tech II Year II semester
Electronics and Computer Engineering
COMPUTER ORGANIZATION AND OPERATING SYSTEMS

Code: 7D403

L	T	P/D	C
3	0	0	3

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

Course Objectives: *The course objectives are*

- *To have a thorough understanding of the basic structure and operation of a digital computer.*
- *To discuss in detail the operation of the arithmetic unit including the algorithms & implementation of fixed-point and floating-point addition, subtraction, multiplication & division.*
- *To study the different ways of communicating with I/O devices and standard I/O interfaces.*
- *To study the hierarchical memory system including cache memories and virtual memory.*
- *To demonstrate the knowledge of functions of operating system memory management scheduling, file system and interface, distributed systems, security and dead locks.*
- *To implement a significant portion of an Operating System.*

Course Outcomes: *Upon completion of the course, students will have thorough knowledge about:*

- *Basic structure of a digital computer*
- *Arithmetic operations of binary number system*
- *The organization of the Control unit, Arithmetic and Logical unit, Memory unit and the I/O unit.*
- *Operating system functions, types, system calls.*
- *Memory management techniques and dead lock avoidance operating systems' file system implementation and its interface.*

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.

Register Transfer Language and Micro Operations: Register Transfer Language, Register Transfer Bus and Memory Transfers, Arithmetic Micro Operations, Logic Micro Operations, Shift Micro Operations, Arithmetic Logic Shift Unit, Instruction Codes, Computer Registers Computer Instructions– Instruction Cycle. Memory – Reference Instructions, Input – Output and Interrupt, STACK Organization, Instruction Formats, Addressing Modes, DATA Transfer and Manipulation, Program Control, Reduced Instruction Set Computer.

UNIT - II

Micro Programmed Control: Control Memory, Address Sequencing, Microprogram Examples, Design of Control Unit, Hard Wired Control, Microprogrammed Control.

The Memory System: Basic Concepts of Semiconductor RAM Memories, Read-Onl y Memories, Cache Memories Performance Considerations, Virtual99 Memories Secondary Storage, Introduction to RAID.

UNIT - III

Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer Modes, Priority Interrupt, Direct Memory Access, Input – Output Processor (IOP), Serial Communication; Introduction to Peripheral Components, Interconnect (PCI) Bus, Introduction to Standard Serial Communication Protocols like RS232, USB, IEEE1394.

UNIT - IV

Operating Systems Overview: Overview of Computer Operating Systems Functions, Protection and Security, Distributed Systems, Special Purpose Systems, Operating Systems Structures-Operating

System Services and Systems Calls, System Programs, Operating Systems Generation.

UNIT -V

Memory Management: Swapping, Contiguous Memory Allocation, Paging, Structure of The Page Table, Segmentation, Virtual Memory, Demand Paging, Page-Replacement Algorithms, Allocation of Frames, Thrashing Case Studies - UNIX, Linux, Windows

Principles of Deadlock: System Model, Deadlock Characterization, Deadlock Prevention, Detection and Avoidance, Recovery from Deadlock.

UNIT - VI

File System Interface: The Concept of a File, Access Methods, Directory Structure, File System Mounting, File Sharing, Protection.

File System Implementation: File System Structure, File System Implementation, Directory Implementation, Allocation Methods, Free-Space Management.

TEXT BOOKS:

1. Computer Organization – Carl Hamacher, Zvonks Vranesic, Safea Zaky, 5th Edition, McGraw Hill.
2. Computer Systems Architecture – M. Moris Mano, 3rd Edition, Pearson
3. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne, 8th Edition, John Wiley.

REFERENCE BOOKS:

1. Computer Organization and Architecture – William Stallings 6th Edition, Pearson
2. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition PHI
3. Fundamentals of Computer Organization and Design – Sivaraama Dandamudi Springer Int. Edition.

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Syllabus for B. Tech II Year II semester
Electronics and Computer Engineering
DATABASE MANAGEMENT SYSTEMS
(Common to all branches)

Code: 7EC03

L	T	P/D	C
3	0	0	3

Course objective:
To understand the different issues involved in the design and implementation of a database system. Study the physical and logical database designs, database modeling, relational, hierarchical, and network models and to understand and use data manipulation language to query, update, and manage a database. Develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency, distributed database, and intelligent database, Client/Server (Database Server), Data Warehousing; and design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

Course Outcomes:
At the end of this course, the student will be able to
1. *Write relational algebra expressions For a given query and optimize the developed expressions*
2. *Design the databases using E-R model for a given specification of the requirement and suggest normalization.*
3. *Construct the SQL queries for Open source and Commercial DBMS -MYSQL, ORACLE, and DB2 for a given specification*
4. *For a given query optimize its execution using Query optimization algorithms*
5. *For a given transaction-processing system, determine the transaction atomicity, consistency, isolation, and durability.*
6. *Implement the isolation property, including locking, time stamping based on concurrency control and Serializability of scheduling.*

Unit 1:
Data base System VS file System
Database system architecture: Data Abstraction, Data Independence, Database Languages:Data Definition Language (DDL), Data Manipulation Language (DML). Data models: Entity-relationship model, network model, relational and object oriented data models. Integrity constraints, Data Manipulation operations. Database System Structure.
Advanced topics: Object oriented and object relational databases, Logical databases, Web databases, Distributed databases, Data warehousing and data mining.

Unit 2:
Relational query languages: Relational algebra, Tuple and domain relational calculus, SQL3, DDL and DML constructs, Open source and Commercial DBMS - MYSQL, ORACLE, DB2, SQL server.
Relational database design: Domain and data dependency, Armstrong's axioms.
Query processing and optimization: Evaluation of relational algebra expressions, Query equivalence, Join strategies, Query optimization algorithms.

Unit 3: Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers, Embedded SQL

Unit 4:
Schema refinement – Problems Caused by redundancy, **Normal forms:** FIRST, SECOND, THIRD Normal forms – BCNF**,** Multi valued Dependencies – FORTH Normal Form **Dependency preservation, Lossless design.**

Unit 5:
Transaction processing: Concurrency control, ACID property, Serializability of scheduling, Locking and timestamp based schedulers, Multi-version and optimistic Concurrency Control schemes, Database recovery.
Storage strategies: Indices, B-trees, hashing.

Unit 6:
Database Security: Authentication, Authorization and access control, DAC, MAC and RBAC models, Intrusion detection, SQL injection.

SUGGESTED BOOKS:
1. "Database System Concepts", 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill.

SUGGESTED REFERENCE BOOKS:
1 "Principles of Database and Knowledge – Base Systems", Vol 1 by J. D. Ullman, Computer Science Press.
2 "Fundamentals of Database Systems", 5th Edition by R. Elmasri and S. Navathe, Pearson Education
3 "Foundations of Databases", Reprint by Serge Abiteboul, Richard Hull, Victor Vianu, Addison-Wesley

Syllabus for B. Tech II Year II semester
Electronics and Computer Engineering
SOFTWARE ENGINEERING

Code: 7D414

L	T	P/D	C
2	0	0	2

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

Course Objectives: *In this course the student will learn about*

(i) The concepts of Software Engineering, various process and system models.
(ii) Software requirements in an engineering perspective.
(iii) Various system models and design engineering.
(iv) The concepts of objected oriented design and approaches to software testing strategies.
(v) *Metrics for products, risk management.*
(vi) *Quality management.*

Course Outcomes: *After completing this course, student should be able to*

(i) Apply process models in real world software products.
(ii) Classify software requirement specification document.
(iii) Design system models and user interface.
(iv) Evaluate test strategies for various softwares.
(v) Describe product metrics, risks.
(vi) Understand the quality management.

UNIT – I: Introduction to Software Engineering: Evolving role of software, Changing Nature of Software, Software myths.
A Generic view of process: Software engineering – A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.
Process Models: The waterfall model, Incremental process models, Evolutionary process models, The Unified process.
Applications: Word processing, Spread sheets, Computer Graphics, multimedia, Database management, Entertainment, Personal & business, Financial applications, Insulin pump, Aerospace Engineering

UNIT – II: Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.
Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.
Applications: Developing Software Requirement Specification document for an application

UNIT - III: System models: Context Models, Behavioral models, Data models, Object models, structured methods.
Design Engineering: Design process and Design quality, Design concepts, and the design model.
Creating an architectural design: Software architecture, Data design, Architectural styles and patterns, Architectural Design.
Applications: Implementing Microwave Oven, Context model for ATM machine, Insulin Pump

UNIT – IV: Object-Oriented Design: Objects and object classes, An Object-Oriented design process, Design evolution, **UML-**Introduction to Unified Modeling Language, UML diagrams.
Performing User Interface design: Golden rules, User Interface analysis and design, interface analysis, interface design steps, Design evaluation.
Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

Applications: Object Model for an application such as Library, Implementing testing strategy on cash counter in malls and in softwares.

UNIT – V: Product Metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.
Metrics for Process and Products: Software Measurement, Metrics for software quality.
Risk Management: Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.
Applications: Calculating SLOC and metrics for a software.

UNIT – VI: Quality Management: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.
Applications: Applied in rating a software or an organization

TEXT BOOKS:

1. Software Engineering, Practitioner's Approach – Roger S. Pressman, 6th Edition, McGraw Hill International Edition.
2. Software Engineering – Sommerville, 7th Edition, Pearson education.

REFERENCES:

1. Software Engineering – K K Agarwal and Yogesh Singh, New Age International Publishers
2. Software Engineering, an Engineering approach – James F Peters, Witold Pedrycz, John Wiley.
3. Systems Analysis and Design – Shely Cashman Rosenlatt, Thomson Publications.
4. Software Engineering principles and practice – Waman S Jawadekar, McGraw Hill Companies

Syllabus for B. Tech II Year II semester
Electronics and Computer Engineering
ANALOG CIRCUITS
(Common to ECE & ECM)

Code: 7C405

L	T	P/D	C
3	0	0	3

Course Objectives :

To understand the basic functioning and applications of various devices such asd amplifiers and oscillators.

Course Outcomes :

After studying this course, the students will be able to

1. *Understand Power Amplifiers*
2. *Analyze and Design tuned and RF amplifiers such as single tuned, double tuned, stagger tuned and wide band amplifier.*
3. *Understand the responses and applications of RC and RL circuits, basic operations of clippers, Clampers*
4. *Understand different types multivibrators, their analysis, designing and applications*
5. *Understand different sweep generators and comparisons*
6. *Understand types of Logic gates and Sampling gates.*

Mapping of Course Outcomes with Program Outcomes

	a	b	c	d	e	f	g	h	i	j	k	l	m
CO1	3	2	2									2	3
CO2	3	2	2									2	3
CO3	3	2	2									2	3
CO4	3	2	2									2	3
CO5	3	2	2									2	3
CO6	3	2	2									2	3

UNIT I

POWER AMPLIFIERS: Classification of Power Amplifiers - Class A, B, AB & C power amplifiers – push pull configuration, complementary symmetry circuits, Distortion in Amplifiers. Harmonic distortion and Crossover Distortion in Power Amplifiers– Conversion efficiency and relative performance.

UNIT II

TUNED AND RF AMPLIFIERS: Introduction to Tuned Amplifiers, Q-Factor. single tuned capacitive coupled amplifier, tapped single tuned capacitance coupled amplifier, single tuned inductively coupled amplifier, stagger tuning, synchronous tuned Amplifier.

UNIT III

WAVE SHAPING: RC high pass, low pass circuit response for sinusoidal, step, pulse, square, ramp & exponential inputs- Differentiator –Integrator. RL, Diode clippers- Transistor clipper- clipping at two independent levels – Emitter coupled clipper- comparator-– Applications of voltage comparators.

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

UNIT IV

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

General operation of monostable multivibrator, collector coupled monostablemultivibrator - wave forms of collector coupled monostable multivibrator - Emitter coupled monostablemultivibrator - triggering of monostable multivibrator. Astablemultivibrator, collector coupled Astable multivibrator -Emitter coupled Astable multivibrator. Designing of Bistable, Monostable and Astable Multivibrators.

UNIT V

TIME BASE GENERATORS: General features of time base signals-sweep circuit using a transistor switch-UJT,UJT characteristics, UJT as a sweep circuit, - General considerations & principles of Miller & Boot strap time base generators- the transistor miller time base- the transistor, Boot strap time base generator- A simple current sweep transistor current time base generator.

UNIT 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- OR, AND, NOT, NAND & NOR gates- DTL Logic– RTL Logic, TTL logic – comparison.

TEXT BOOKS:

1. Integrated electronics-J.Milliman and C.C.Halkias, MC Graw –Hill-1972
2. Pulse digital and switching wave forms-J. Millman and H. Taub, Tata McGraw-Hill, New Delhi,2001.
3. 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
3. Electronic Circuit Analysis-K.Lal Kishore, 2004, BSP

Syllabus for B. Tech II Year II semester
Electronics and Computer Engineering

ENVIRONMENTAL SCIENCE AND ECOLOGY

II B. Tech I Sem (for EEE, ME and ECE)
II B. Tech II Sem (for CSE, IT, ECM and CE)

Code: 7HC21

L	T	P/D	C
2	0	0	0

a	b	c	d	e	f	g	h	i	j	k	l	m
L					H	H	M					

There are no credits but grading will be given based on marks scored as ***Outstanding/ Excellent/ Very good/ Good/ Above average/ Average/ Satisfactory/Not satisfactory***

Course Objectives:

- *Understanding the importance of ecological balance for sustainable development.*
- *Understanding the impacts of developmental activities and mitigation measures.*
- *Understanding the environmental policies and regulations*

UNIT-I Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity.

UNIT-II Natural Resources: Classification of Resources: Living and Non-Living resources, water resources: use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. Mineral resources: use and exploitation, environmental effects of extracting and using mineral resources, Land Energy resources: growing energy needs, renewable and non renewable energy sources, use of alternate energy source.

UNIT-III Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation.

UNIT-IV Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, Air Pollution: Primary and secondary pollutants. Acid rain, Global warming, Ozone layer depletion, Water pollution: Sources and types of pollution. Soil Pollution: Sources and types, Impacts of modern agriculture, degradation of soil. Noise Pollution: Sources and Health hazards, standards, Solid waste: Municipal Solid Waste management, composition and characteristics of e-Waste and its management. Pollution control technologies: Sewage water Treatment, Kyoto protocol, and Montréal Protocol.

UNIT-V Sustainable development and Green Technology: Concept of sustainable development, threats to sustainability population and its explosion, Crazy consumerism, over- exploitation of resources, strategies for achieving sustainable development environmental education, conservation of resources, urban sprawl sustainable cities and sustainable communities, human health , role of IT in Environment, Environmental Ethics, Environmental Economic – Concept of Green Building, Clean Development Mechanism (CDM).

UNIT-VI Environmental Policy, Legislation & Environment Impact Assessment: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP).

Course Outcomes

After completion of the course, the student will be able to:

1. *Understand about ecosystem and energy flow among the organisms.*
2. *Know the resources available, use of them and overexploitation of the resources in the nature.*
3. *Learn the value, use and value of biodiversity.*
4. *Understand the causes and effect of pollution and implement measures in control of pollution.*
5. *Understand the sustainable development and implement green technology for sustainable development..*
6. *Learn and implement policy to protect the environment.*

TEXT BOOKS:

1. Introduction to Environmental Science Dr. Y. Anjaneyulu, 2004, BS Publications.
2. Environmental Studies by Erach Bharucha, 2005 University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.

Syllabus for B. Tech II Year II semester
Electronics and Computer Engineering
ANALOG CIRCUITS LAB
(Common to ECE & ECM)

Code: 7C474

L	T	P/D	C
0	0	2	1

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

Course Objectives: *To prepare students to practice the design and analysis of any Analog electronics circuit.*

Course Outcomes:
At the end of the laboratory course, the students will be able to

1. *To understand the design and working of various linear and non-linear wave shaping circuits.*
2. *To demonstrate the working principle of various multivibrators.*
3. *To verify the functionalities of various logic gates.*
4. *To perform and verify the BJT/ FET and feedback amplifiers.*
5. *To perform and verify the working of oscillators and voltage regulators.*
6. *To perform laboratory experiment to verify the conversion efficiency of various power amplifiers.*

Syllabus Content:

Part-A: Hardware based experiments

1. Linear wave shaping.
2. Non Linear wave shaping – Clippers. clampers.
3. UJT Relaxation Oscillator
4. Astable and monostable Multivibrator.
5. Bistable Multivibrator.
6. Study of Logic Gates with discrete components.

Part-B: Software Simulation based experiments (Multisim OR Pspice OR Tina Pro Or Equivalent Simulation Software)

1. Common Emitter and Common Source amplifier
2. Voltage shunt and Feedback Amplifier
3. Cascade Amplifier (CE+CE, CE+CC)
4. RC Phase Shift Oscillator using Transistors
5. Class- A and Class-B Complementary Symmetry Power Amplifier
6. Series and Shunt Voltage Regulator.

1	2	3	4	5	6	7	8	9	10	11	12
		x									

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

Code: 7EC73

L	T	P/D	C
0	0	3	1.5

Course objective:
Design the optimal queries using structured and unstructured query languages like SQL and PL/SQL by making use of control structures, cursors, triggers and functions/procedures.

Course Outcomes :
At the end of this course, the student will be able to

1. *Create tables for a database and apply Queries using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.*
2. *Write Queries using Aggregate functions such as [COUNT, SUM, AVG, MAX, MIN, GROUP BY, HAVING], Conversion functions and use string functions for a given application.*
3. *Explain and write programs using PL/SQL programs using exceptions, COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.*
4. *Develop programs using WHILE LOOPS, FOR LOOPS, nested loops using BUILT–IN Exceptions and write Procedures.*
5. *Write Programs for stored functions invoke functions in SQL Statement and write Programs for packages specification.*
6. *Describe and write programs using features of CURSORs and its variables.*
7. *Develop Programs implementing Triggers.*

Exercises

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

11. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
12. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers.
13. Queries using SQL-INJECTION: AND/OR Attack, Comments Attack, String Concatenation Attack, UNION Injection Attack

TEXT BOOKS:

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

1	2	3	4	5	6	7	8	9	10	11	12
	x										

Syllabus for B. Tech II Year II semester
Electronics and Computer Engineering
OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB
(Common to CSE, IT and ECM)

Code: 7EC72

L	T	P/D	C
0	0	3	1.5

Course objective :
Understand, design an execute the programs involving concepts of Java and object oriented programming principles.

Course Outcomes:
At the end of this course, the student will be able to
1 *Write programs to generate Prime numbers, Roots of quadratic equation and Fibonacci series.*
2 *Write small application such as banking system.*
3 *Write programs on operator, function overloading and dynamic method dispatch.*
4 *Write programs to implement interface and packages.*
5 *Explain and write programs to implement threads.*
6 *Write programs to implement applets and event handling.*
7 *Write an application to implement client and server scenario.*

List of Programs:

1. A) Write a program to print prime numbers up to a given number.
   B) Write a program to print roots of a quadratic equation ax2+bx+c=0.
   C) Write a program to print Fibonacci sequence up to a given number.

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

Instance Methods:
To assign instance variables (Constructors-Zero argument and parameterized)
1. To deposit an amount
2. To withdraw amount after checking the balance

(iv) To display name and address
Define ExecuteAccount class in which define main method to test above class.

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

Example:
For account no variable, define the methods
getAccountNo() and setAccountNo(int accno)
In each and every method of Account class, reading data from and writing data to instance variables should be done through these variables.

3. A) Define Resister class in which we define the following members:
Instance variables:
resistance
Instance Methods:
giveData():To assign data to the resistance variable
displayData(): To display data in the resistance variable
constructors

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

B) Modify the above two methods which should accept array of Resistor objects as argument and return Resistor object as result.

4. A) Write a program to demonstrate method overriding.
B) Write a program to demonstrate the uses of "super" keyword (three uses)
C) Write a program to demonstrate dynamic method dispatch (i.e .Dynamic polymorphism).

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

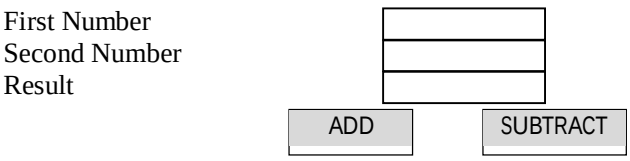
6. A) Define an interface "GeomtricShape" with methods area( ) and perimeter( ) (Both method's return type and parameter list should be void and empty respectively.
Define classes like Triangle, Rectangle and Circle implementing the "GeometricShape" interface and also define "ExecuteMain" class in which include main method to test the above class

B) Define a package with name "sortapp" in which declare an interface "SortInterface" with method sort( ) whose return type and parameter list should be void and empty.Define "subsortapp" as subpackage of "sortapp" package in which define class "SortImpl" implementing "SortInterface" in which sort() method should print a message linear sort is used.
Define a package "searchingapp" in which declare an interface "SearchInterface" with search( ) method whose return type and parameter list should be void and empty respectively.
Define "searchingimpl" package in which define a "SearchImpl" class implementing "SearchInterface" defined in "searchingapp" package in which define a search( ) method which should print a message linear search is used.
Define a class ExecutePackage with main method using the above packages(classes and its methods).
Use ArrayList class of Collections Framework to and use algorithms to search and sort the elemnt of an array.

7) Modify the withdraw() method of Account class such that this method should throw "InsufficientFundException" if the account holder tries to withdraw an amount that leads to condition where current balance becomes less than minimum balance otherwise allow the account holder to withdraw and update the balance accordingly.

8. A) Define two threads such that one thread should print even numbers and another thread should print odd numbers.
B) Modify the Account class to implement thread synchronization concept.
C) Define two threads such that one thread should read a line of text from text file and another thread should write that line of text to another file. (Thread communication example).
D) Write a program to implement thread priority.

9) Design the user screen as follows and handle the events appropriately.



10) Write a program to simulate a calculator

11) Write a Java program for handling mouse events and key events.

12) a) Write a program for handling window events.
b) Develop an applet that displays a simple message..

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

14) Develop a client/server application in which client read a file name from keyboard and send the file name to the server, and server will read the file name from client and send the file contents to the client.

Syllabus for B. Tech II Year II semester
Electronics and Computer Engineering
TECHNICAL SEMINAR - IV
(Common to all branches)

Code: 7D494

L	T	P/D	C
0	0	2	1

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

Course Objective :

Develop ability to be a public speaker. Learn the importance of delivering seminars for demonstrating oratory and develop interview facing skills.

Course Outcomes: *After completing this course, the student will be able to*

1. *Identify current general, political and technology related topics.*
2. *Arrange and present seminar in a effective manner*
3. *Collect, survey and organize content in presentable manner*
4. *Demonstrate oratory skills with the aid of Power Point Presentations*
5. *Exhibit interview facing skills and team leading qualities*

Procedure

1. Seminar in-charges shall highlight the significance of technical seminar in the first two sessions and enlighten the students on the utility of these seminars.
2. The slots, titles shall be decided upfront and seminar in charge shall take signatures.
3. The same sheet shall be affixed in the respective classrooms and seminar register.
4. If any student fails to present his/her seminar on the given slot, to genuine reasons, they may be asked to present in the subsequent slot/week.
5. Progress of the seminars need to be reviewed by the concerned HOD once in 15 days.
6. The evaluation for technical seminars has to be informed to students and displayed in the classrooms.
7. Report and presentation must contain topic, introduction, explanation, diagrams, tables, applications and conclusions.

Distribution of marks

There shall be a Technical Paper writing and seminar evaluated for 100 marks in First Year First Semester. The evaluation is purely internal and will be conducted as follows:

Literature survey, topic and Content	: 10 marks
Presentation including PPT	: 15 marks
Seminar Notes	: 10 marks
Interaction	: 5 marks
Report	: 10 marks
Attendance in the seminar class	: 10 marks
Punctuality in giving seminar as per schedule time and date	: 10 marks
Mid semester viva (on the seminar topics completed up to the end of 9th week	: 10 marks
End semester Viva	: 20 marks
Total	**100 Marks**

Syllabus for B. Tech II Year II semester
Electronics and Computer Engineering

COMPREHENSIVE VIVA VOCE – I

(Common to all branches)

Code: 7D481

L	T	P/D	C
0	0	0	1

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

Course Objective :

Evaluate, comprehend and assess of the concepts and the knowledge gained in the core courses of the first and the second year.

Course Outcomes :

At the end of this course, the student will be able to

1. *Comprehend the concepts in the core and elective courses.*
2. *Exhibit technical knowledge to face interviews.*
3. *Exhibit lifelong Learning skills for higher education and to pursue Professional practice.*

There will be 100 marks in total with 30 marks of internal evaluation and 70 marks of external evaluation.

Internal:

Comprehensive Viva Voce is Conducted twice in a semester and evaluated for 15 marks each.

End examination : 70 Marks.

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