BACHELOR OF TECHNOLOGY

Electronics & Communication Engineering

COURSE STRUCTURE& SYLLABUS

(Batches admitted from the Academic Year 2022 - 2023)

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(Autonomous Institution-UGC, Govt. of India)

Accredited by NBA & NAAC with 'A' Grade

NIRF Indian Ranking, Accepted by MHRD, Govt. of India | Rank Band – Excellent by ARIIA, Accepted by MHRD, Govt. of India

Approved by AICTE, Affiliated to JNTUH, ISO9001:2015 Certified Institution

Platinum Rated by AICTE-CII Survey, AAAA+ Rated by Digital Learning Magazine, AAA+ Rated by Careers 360, National Ranking-Top 100 Rank band by Outlook Magazine, 2nd Rank by CSR, National Ranking-Top 100 Rank band by Times News Magazine, 141 Rank by India Today-Best Engineering Colleges of India Rankings-2020.

Maisammaguda, Dhulapally, Secunderabad, Kompally-500100.

COURSE STRUCTURE

I Year B. Tech – I Semester (I Semester)

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	2200BS01	Linear Algebra and Differential Equations	3	1	-	4	30	70
2	2205ES01	Programming for Problem Solving	3	1	-	4	30	70
3	2200BS05	Applied Physics	3	-	-	3	30	70
4	2203ES01	Computer Aided Engineering Graphics	1	-	4	3	30	70
5	2200HS01	English	1	-	3	2.5	30	70
6	2200BS61	Applied Physics Lab	-	-	3	1.5	30	70
7	2200HS61	English Language & Communication Skills Lab	-	-	2	1	30	70
8	2205ES61	Programming for Problem Solving Lab	-	-	2	1	30	70
9	2200MC02	Foreign Language: French	2	--	-	-	100	-
10		Induction Programme	-	-	-	-	-	-
		TOTAL	**14**	**2**	**14**	**20**	**340**	**560**

***Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree**

I Year B. Tech – II Semester (II Semester)

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	2200BS02	Advanced Calculus	3	1	-	4	30	70
2	2205ES02	Python Programming	3	-	-	3	30	70
3	2202ES01	Basic Electrical Engineering	3	1	-	4	30	70
4	2200BS06	Engineering Chemistry	3	-	-	3	30	70
5	2203ES61	Engineering Workshop	1		3	2.5	30	70
6	2202ES61	Basic Electrical Engineering Lab	-	-	2	1	30	70
7	2205ES62	Python Programming Lab	-	-	3	1.5	30	70
8	2200BS62	Engineering Chemistry Lab	-	-	2	1	30	70
9	2200MC01	Environmental science	1	-	-	-	100	-
		TOTAL	**14**	**2**	**10**	**20**	**340**	**560**

***Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree**

II Year B. Tech – I Semester (III Semester)

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	2204PC01	Probability Theory & Stochastic Process	3	1	-	4	30	70
2	2204PC02	Electronic Devices & Circuits	3	-	-	3	30	70
3	2204PC03	Signals & Systems	3	-	-	3	30	70
4	2204PC04	Network Analysis	3	-	-	3	30	70
5	2205ES03	Computer Organization & Operating Systems	3	-	-	3	30	70
6	2204PC61	Electronic Devices & Circuits Lab	-	-	3	1.5	30	70
7	2204PC62	Basic Simulation Lab	-	-	3	1.5	30	70
8	2204PR01	Innovative Product Development -I			2	1	30	70
9*	2200MC03	Indian Constitution	2	-	-	-	100	-
		TOTAL	**17**	**1**	**8**	**20**	**340**	**560**

***Mandatory course: Non-credit course, 50% of scoring is required for the award of the Degree**

II Year B. Tech – II Semester (IV Semester)

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	2204PC05	Analog Circuits	3	-	-	3	30	70
2	2204PC06	Analog and Digital Communications	3	-	-	3	30	70
3	2204PC07	Control Systems	3	-	-	3	30	70
4	2200BS03	Mathematics-III	3	1	-	4	30	70
5	2200HS03	Managerial Economics & Financial Analysis	3	-	-	3	30	70
6	2204PC63	Analog Circuits Lab	-	-	3	1.5	30	70
7	2204PC64	Analog & Digital Communication Lab	-	-	3	1.5	30	70
8	2204PR02	Innovative Product Development -II			2	1	30	70
9*	2200MC04	Human Values and Professional Ethics	2	-	-	-	100	-
		TOTAL	**17**	**1**	**8**	**20**	**340**	**560**

***Mandatory course: Non-credit course, 50% of scoring is required for the award of the Degree**

III Year B. Tech – I Semester (V Semester)

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	2200HS04	Management Science	3	-	-	3	30	70
2	2204PC08	Digital System Design	3	1	-	4	30	70
3	2204PC09	Electromagnetic Waves	3	-	-	3	30	70
4		Professional Elective -I	3	-	-	3	30	70
5		Open Elective -I	3	-	-	3	30	70
6	2204PC65	Digital System Design Lab	-	-	3	1.5	30	70
7	2204PC66	Electromagnetic Waves Lab	-	-	3	1.5	30	70
8	2204PR03	Innovative Product Development -III			2	1	30	70
9	2200MC06	Technical Communication& Soft skills	2	-	-	-	100	-
		TOTAL	**17**	**1**	**8**	**20**	**340**	**560**

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III Year B. Tech – II Semester (VI Semester)

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	2200HS02	Professional English	3	-	-	3	30	70
2	2004PC10	Digital Signal Processing	3	1	-	4	30	70
3	2004PC11	Linear & Digital IC Applications	3	-	-	3	30	70
4		Professional Elective -II	3	-	-	3	30	70
5		Open Elective -II	3	-	-	3	30	70
6	2204PC67	Digital Signal Processing Lab	-	-	3	1.5	30	70
7	2204PC68	Linear & Digital IC Applications Lab	-	-	3	1.5	30	70
8	2204PR04	Innovative Product Development -IV			2	1	30	70
9	2200MC05	Indian Traditional Knowledge	2	-	-	-	100	-
		TOTAL	**17**	**1**	**8**	**20**	**340**	**560**

***Mandatory course: Non-credit course, 50% of scoring is required for the award of the Degree**

IV Year B. Tech – I Semester (VII Semester)

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	2204PC12	Computer Networks	3	-	-	3	30	70
2	2204PC13	Microprocessors & Microcontrollers	3	-	-	3	30	70
3		Professional Elective-III	3	-	-	3	30	70
4		Professional Elective -IV	3	-	-	3	30	70
		Open Elective -III	3	-	-	3	30	70
5	2204PC69	Computer Networks Lab	-	-	3	1	30	70
6	2204PC70	Microprocessors & Microcontrollers Lab	-	-	3	1	30	70
7	2204PR05	Innovative Product Development -V			2	1	30	70
8	2204PR06	Industry Oriented Mini Project /Internship	-	-	2	1	30	70
9	2204PR07	Project -I	-	-	2	1	30	70
10*	2200MC07	Gender Sensitization	2	-	-	-	100	-
		TOTAL	**17**	**-**	**14**	**20**	**400**	**700**

***Mandatory course: Non-credit course, 50% of scoring is required for the award of the Degree**

Industry Oriented Mini Project/ Internship - During Summer Vacation-Evaluation in IV-I

IV Year B. Tech – II Semester (VIII Semester)

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1		Professional Elective -V	3	-	-	3	30	70
2		Professional Elective -VI	3	-	-	3	30	70
3		Open Elective -IV	3	-	-	3	30	70
4	2204PR09	Technical Seminar	-	-	4	2	100	-
5	2204PR09	Innovation- Start-Up & Entrepreneurship	-	-	6	3	50	100
6	2204PR10	Project - II	-	-	12	6	50	100
		TOTAL	**9**	**-**	**14**	**20**	**290**	**410**

Semester	I-I	I-II	II-I	II-II	III-I	III-II	IV-I	IV-II	TOTAL
Credits	20	20	20	20	20	20	20	20	160

TOTAL Credits: 160

PROFESSIONAL ELECTIVES					
Professional Elective-I		**Professional Elective -II**		**Professional Elective -III**	
2204PE01	Mobile Communications	**2204PE04**	Antennas and Wave Propagation	**2204PE07**	Fiber Optic Communication
2204PE02	Error Correcting Codes	**2204PE05**	Wavelet Transforms	**2204PE08**	DSP Architecture
2204PE03	Electronic Measurement & Instrumentation	**2204PE06**	Automotive Electronics	**2204PE09**	VLSI Design
Professional Elective -IV		**Professional Elective -V**		**Professional Elective -VI**	
2204PE10	Global Positioning Systems	**2204PE13**	Radar Systems	**2204PE16**	5G Communications
2204PE11	Digital Image Processing	**2204PE14**	Speech & Audio Processing	**2204PE17**	Consumer Electronics
2204PE12	Robotics Engineering	**2204PE15**	CMOS Design	**2204PE18**	Mixed Signal Processing

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List of Open Electives offered by Various Departmets for B.Tech. III & IV Year

S.No	Name of the Department Offering Open Electives	Open Elective –I (Semester- V)	Open Elective –II (Semester –VI)	Open Elective –III (Semester –VII)	Open Elective –IV (Semester –VIII)
1	**Electronics & Communication Engineering**	2204OE01: Computer Organization 2204OE02: Sensors & Actuators	2204OE03: Principles of Electronic Communications 2204OE04: Fuzzy Logic & Neural Networks	2204OE05:Principles of Computer Communications & Networks 2204OE06: Internet of Things	2204OE07: Microprocessor and Interfacing 2204OE08: Robotics
2	**Computer Science & Engineering**	2205OE01: Data Structures using PYTHON 2205OE02: Operating Systems Principles	2205OE03: Java Programming 2205OE0 Data& Knowledge Mining	2205OE05: Case Tools &Software Testing 2205OE06: Fundamentals of Database Management Systems	2205OE07: Computer Forensics 2205OE08: Cryptography and Network Security
3	**Information Technology**	2212OE01: Image Processing 2212OE02: Software Engineering Principles	2212OE03:Web Design 2212OE04:Design Patterns	2212OE05:Introduction to Linux 2212OE06: Principles of Programming Languages	2212OE07:R-Programming 2212OE08:Scripting Languages
4	**Electrical & Electronics Engineering**	2202OE01: Computer Organization and Operating Systems 2202OE02:Elements of Electrical Engineering	2202OE03:Principles of Power System Engineering 2202OE04:Utilization of Solar Energy	2202OE05:Renewable Energy Systems 2202OE06:Basics Control System Engineering	2202OE07:Energy storage Systems 2202OE08:Illumination Engineering

ECE

SYLLABUS

B.Tech– I YEAR

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2200BS01) LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS

B.TECH I YEAR I SEMESTER **L T P C**
3 1 0 4

Course Objectives:.To learn

- Types of Matrices and their properties, concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations.
- Concept of Eigen values and Eigenvectors and to reduce the quadratic form to canonical form.
- Methods of solving the linear differential equations of first order, equations solvable for p, y and x.
- Methods of solving the linear differential equations of higher order.
- Partial differentiation, concept of total derivative, finding maxima and minima of function of two and three variables.

Course Outcomes:

After learning the contents of this paper, the student must be able to

- Write the matrix representation of a set of linear equations and to analyze the solution of the system of equations
- Find the Eigen values and Eigen vectors and reduce the quadratic form to canonical form using orthogonal transformations.
- Identify whether the given differential equation of first order is exact or not and solve the first order differential equations.
- Solve higher differential equation and apply the concept of differential equation to real world problems.
- Find the extreme values of functions of two variables with/ without constraints.

UNIT-I:

Matrices: Types of Matrices, Symmetric; Skew-symmetric; Hermitian; Skew-Hermitian; Orthogonal matrices; Unitary Matrices; Rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordan method; System of linear equations; Solving system of Homogeneous and Non-Homogeneous equations. Gauss elimination method; Gauss Seidel Iteration Method.

UNIT-II:

Eigen Values and Eigen Vectors: Eigen values and Eigenvectors and their properties; Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); Finding inverse and powers of a matrix by Cayley-Hamilton Theorem; Linear Transformation and Orthogonal Transformation; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to Canonical form by Orthogonal Transformation.

UNIT-III:

First Order ODE: Exact, Linear and Bernoulli's equations; Newton's law of cooling, Law of Natural Growth and Decay; Equations not of first degree: Equations solvable for p, y and x, Clairaut's type.

UNIT-IV:

Ordinary Differential Equations of Higher Order: Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type e^{ax}, *sin ax, cos ax*, polynomials in x, $e^{ax}V(x)$ and $x\,V(x)$, Method of Variation of Parameters.

UNIT-V:

Multivariable Calculus: Definitions of Limit and Continuity. Partial Differentiation; Euler's Theorem; Total derivative; Jacobian; Functional dependence & independence, Maxima and minima of functions of two variables and three variables using method of Lagrange's multipliers.

TEXTBOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.
2. R. K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics, Narosa Pubishers, 4th Edition, 2014.

REFERENCES:

1. Michael Greenberg, Advanced Engineering Mathematics, Pearson Education, 2nd Edition, 1998.
2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons,
3. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2017.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2205ES01: PROGRAMMING FOR PROBLEM SOLVING

B.TECH I YEAR I SEMESTER **L T P C**

3 0 0 4

Course Objectives:

- To learn the fundamentals of computers.
- To understand the various steps in program development.
- To learn the syntax and semantics of C programming language.
- To learn the usage of structured programming approach in solving problems.

Course Outcomes: The student will learn

- To write algorithms and to draw flowcharts for solving problems.
- To convert the algorithms/flowcharts to C programs.
- To code and test a given logic in C programming language.
- To decompose a problem into functions and to develop modular reusable code.
- To use arrays, pointers, strings and structures to write C programs.
- Searching and sorting problems.

UNIT I:

Introduction: Introduction to components of a computer system: disks, primary and secondary memory, processor, operating system, compilers, creating, compiling and executing a program etc., Number systems.

Introduction to Algorithms: steps to solve logical and numerical problems. Representation of Algorithm, Flowchart/Pseudo code with examples, Program design and structured programming. Introduction to C Programming Language:

Structure of a C program, Identifiers, variables (with data types and space requirements), Syntax and Logical Errors in compilation, object and executable code, Operators- Arithmetic operators, relational and logical operators, increment and decrement operators, Bitwise operators, conditional operator, assignment operator, expressions and precedence, Expression evaluation, type conversion, typedef, The main method and command line arguments.

I/O: Simple input and output with scanf and printf, formatted I/O, Introduction to stdin, stdout and stderr.

UNIT II:

Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching with if, if-else, switch-case, ternary operator, goto, Iteration with for, while, do while loops

Arrays: one and two dimensional arrays, creating, accessing and manipulating elements of arrays.

Strings: Introduction to strings, handling strings as array of characters, basic string functions available in C (strlen, strcat, strcpy, strstr etc.), arrays of strings

UNIT – III

Functions: Designing structured programs, declaring a function, Signature of a function, Parameters and return type of a function, passing parameters to functions, call by value, Passing arrays to functions, passing pointers to functions, idea of call by reference, Some C standard functions and libraries, Passing 1-D arrays, 2-D arrays to functions

Recursion: Simple programs, such as Finding Factorial, Fibonacci series, Towers of Hanoi etc., Limitations of Recursive functions.

Storage Classes - extern, auto, register, static, scope rules, block structure.

UNIT IV:

Structures: Defining structures, initializing structures, unions, Array of structures

Pointers: Idea of pointers, Defining pointers, Pointers to Arrays and Structures, pointers to pointers ,Use of Pointers in self-referential structures, usage of self referential structures in linked list (no implementation) Enumeration data type and bit-fields.

Dynamic Memory Management functions, Preprocessing Directives, Preprocessor: Commonly used Preprocessor commands like include, define, undef, if, ifdef, ifndef .

UNIT – V

File Handling: Files: Text and Binary files, Creating and Reading and writing text and binary files, Appending data to existing files, Writing and reading structures using binary files, Random access using fseek, ftell and rewind functions

Introduction to Algorithms: Algorithms for finding roots of quadratic equations, finding minimum and maximum numbers of a given set, finding if a number is prime number, etc. Basic searching in an array of elements (linear and binary search techniques), Basic algorithms to sort array of elements (Bubble, Insertion and Selection sort algorithms), Basic concept of order of complexity through the example programs

Text Books:

1. Computer Science: A Structured Programming Approach Using C, B. A. ForouzanandR. F. Gilberg, Third Edition, Cengage Learning.
2. Programming in C. P. Dey and M Ghosh , Second Edition, Oxford University Press.

Reference Books:

1. The C Programming Language, B.W. Kernighan and Dennis M. Ritchie, Second Edition, Pearson education.
2. Programming with C, B. Gottfried, 3rd edition, Schaum's outlines, McGraw Hill Education (India) PvtLtd.
3. C From Theory to Practice, G S. Tselikis and N D. Tselikas,CRCPress.

Basic computation and Programming with C, Subrata Saha and S. Mukherjee, Cambridge

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200BS06: APPLIED PHYSICS

B.TECH I YEAR I SEMESTER **L T P C**
3 1 0 4

Course Objectives:

- Students will demonstrate skills in scientific inquiry, problem solving and laboratory techniques.
- Students will be able to demonstrate competency and understanding of the concepts found in Quantum Mechanics, Fiber optics and lasers, Semiconductor physics.
- The graduates will be able to solve non-traditional problems that potentially draw on knowledge in multiple areas of physics.
- To study applications in engineering like memory devices, transformer core and electromagnetic machinery.

Course Outcomes: Upon graduation:

- The student would be able to learn the fundamental concepts on Quantum behavior of matter in its micro state.
- The knowledge of fundamentals of Semiconductor physics, Optoelectronics, Lasers and fibre optics enable the students to apply to various systems like communications, solar cell, photo cells and so on.
- Design, characterization and study of properties of material help the students to prepare new materials for various engineering applications.
- The course also helps the students to have exposure on dielectric materials and magnetic materials.

UNIT-I: Quantum Mechanics:

Introduction to quantum physics, Black body radiation, Photoelectric effect, Compton effect experiment and Compton shift, Wave-particle duality, de-Broglie's hypothesis, Davisson and Germer experiment, Heisenberg's Uncertainty principle, physical significance of Wave function (ψ), Schrodinger's time independent wave equation, Particle in one dimensional box.

UNIT-II: Semiconductor Physics:

Intrinsic and Extrinsic semiconductors, Fermi level in intrinsic and extrinsic semiconductors, calculation of carrier concentration in intrinsic and extrinsic semiconductors, Carrier generation and recombination, Carrier transport: diffusion and drift, Hall effect: determination of Hall coefficient and experiment, Hall voltage, direct and indirect band gap semiconductors, p-n junction diode: energy band diagram for open and closed circuits, Zener diode and its V-I Characteristics and applications.

UNIT-III: Optoelectronics:

Radiative and non-radiative recombination mechanisms in semiconductors, Types of luminescence: Electro luminescence and Photo luminescence, LED: Device structure, Materials, Characteristics and figures of merit, Semiconductor photo detectors: Solar cell: working principle,

structure, Materials, PIN and Avalanche photo detectors: working principle, structure, Materials, and Characteristics and applications.

UNIT-IV: Lasers and Optical fibers:

Lasers: Characteristics of Lasers, interaction of radiation with matter: stimulated absorption, spontaneous and stimulated emission, Einstein's relations, Principle and working of Laser: Population inversion, Pumping mechanisms, Types of Lasers: Ruby laser, He-Ne laser, Semiconductor lasers, Applications of laser. Fiber Optics: Introduction to Optical fiber, Optical fiber as a dielectric wave guide, Total internal reflection, Acceptance angle, Acceptance cone and Numerical aperture, mode and transmission of signal through Step and Graded index fibers, Losses associated with optical fibers, Applications of optical fibers in communication system (block diagram) and in other fields.

UNIT-V: Dielectric and Magnetic Properties of Materials:

Electric dipole, dipole moment, dielectric constant, polarizability, electric displacement, electric susceptibility, types of polarization: electronic, ionic and orientation (qualitative) polarizations, calculation of polarizabilities of electronic and ionic polarization, Internal fields in a solid, Clausius-Mossotti equation, Ferroelectrics, Piezo electrics and Pyro electrics, Applications of dielectrics, Magnetization, field intensity, magnetic field induction, permeability and susceptibility, Bohr magneton, Classification of magnetic materials on the basis of magnetic moment, explanation of hysteresis curve based on domain theory, soft and hard magnetic materials, applications of magnetic materials.

TEXT BOOKS:

1. Engineering Physics, B.K. Pandey, S. Chaturvedi - Cengage Learing.
2. Halliday and Resnick, Physics - Wiley.
3. A textbook of Engineering Physics, Dr. M. N. Avadhanulu, Dr. P.G. Kshirsagar - S. Chand

REFERENCES:

1. Richard Robinett, Quantum Mechanics
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, Mc Graw-Hill inc. (1995).
3. Online Course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak Guptha on NPTEL
4. "Semiconductor Physics and Devices", Mc Graw Hill, 4th Edition by Donald Neamen
5. Introduction to Solid State Physics by Charles kittel, wiley student edition.
6. S.M.Sze, Semiconductor Devices: Physics and Technology, wiley (2008).

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2203ES01: COMPUTER AIDED ENGINEERING GRAPHICS

B.TECH I YEAR I SEMESTER **L T P C**
1 0 4 3

Course Objectives:

1. To enable the students with various concepts like Dimensioning, Conventions and standards related to working drawing in order to become professionally efficient and to introduce fundamental concepts of curves used in engineering,
2. Students are capable to understand the Orthographic Projections of Points and Lines and are able to improve their visualization skills so that they can apply these skills in developing the new products.
3. Understands and becomes efficient in applying the concept of Orthographic Projections of Points, Lines and Planes in industrial applications
4. Can employ freehand 3D pictorial sketching to aid in the visualization process and to efficiently communicate ideas graphically.
5. Analyze a drawing and can efficiently communicate ideas graphically and Draw the 3D views using CAD.

Course Outcomes:

1. Gets knowledge on usage of various drawing instruments and capable to draw various curves like conic curves, cycloidal curves and involutes.
2. Understand the Orthographic Projections of Points and Lines and are able to improve their visualization skills so that they can apply these skills in developing the new products.
3. Understand about orthographic projection and able to draw planes and solids according to orthographic projections.
4. Can employ freehand 3D pictorial sketching to aid in the visualization process and to draw the 3D views using CAD software.
5. To convert and draw the given orthographic view to isometric view using CAD software and vice versa.

UNIT-I:

Introduction to AutoCAD Software:

The Menu System, Toolbars (Standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Crosshairs, Coordinate System), Dialog boxes and windows, Shortcut menus (Button Bars), The Command Line, The Status Bar, Different methods of zoom as used in CAD, Select and erase objects.

Introduction to Engineering Drawing:

Principles of Engineering drawing and their significance, Conventions, Drawing Instruments

Engineering Curves: Construction of Ellipse, Parabola and Hyperbola – General and Special methods; Cycloidal curves- Epicycloids and Hypocycloids.

UNIT-II:

Orthographic Projections, Projections of Points & Straight Lines: Principles of Orthographic Projections – Conventions; Projections of Points in all positions; Projections of lines Parallel to one Plane and Perpendicular to other Plane and Vice-versa - Inclined to one Plane and Parallel to other Plane and Vice-versa - Surface inclined to both the Planes.

UNIT-III:

Projections of Planes: Projections of Planes- Surface Parallel to one Plane and Perpendicular to other Plane and Vice-versa – Surface Inclined to one Plane and Parallel to other Plane and Vice-versa - Surface Inclined to both the Planes.

UNIT-IV:

Projections of Regular Solids: Projections of Regular Solids-Parallel to one Plane and Perpendicular to other Plane and vice-versa- inclined to one Plane and Parallel to other Plane and vice-versa- Inclined to both the Planes– Prisms, Pyramids, Cylinder and Cone.

UNIT-V:

Isometric Projections: Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and Compound Solids

Conversion of Isometric Views to Orthographic Views and Vice-versa, Conventions

Introduction to Solid Modeling: Creation of simple solid models relevant to the domain.

TEXT BOOKS

1. Engineering Drawing, N.D. Bhatt – N.D. Bhatt & V.M Panchal, 48th Edition, 2005 Charotar Publishing House, and Gujarat.
2. "Computer Aided Engineering Drawing"by Dr. M H Annaiah, Dr C N Chandrappa and Dr B Sudheer Premkumar Fifth edition, New Age International Publishers.
3. Engineering Drawing by K.Venu Gopal& V.Prabu Raja New Age Publications.

REFERENCES

1. Engineering drawing – P.J. Shah .S.Chand Publishers.
2. Engineering Drawing / Basant Agarwal and McAgarwal / McGraw Hill
3. Engineering Drawing- Johle/Tata Macgraw Hill Book Publisher.
4. Computer Aided Engineering Drawing – S. Trymbaka Murthy, - I.K. International Publishing House Pvt. Ltd., New Delhi, 3rd revised edition-2006.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200HS01: ENGLISH

B.TECH I YEAR I SEMESTER **L T P C**
2 0 0 2

INTRODUCTION

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, the syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students.

In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study. The students should be encouraged to read the texts leading to reading comprehension and different passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc. The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts and cultures.

Course Objectives: The course will help to:

a. Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills.
b. To enhance competencies in writing essays and gist of the passage in words.
c. Equip students to study academic subjects more effectively and critically using the theoretical and practical components of English syllabus.
d. Develop study skills and communication skills in formal and informal situations.

Course Outcomes: Students should be able to:

1. Use English Language effectively in spoken and written forms.
2. Comprehend the given texts and respond appropriately.
3. Communicate confidently in various contexts and different cultures.
4. Acquire basic proficiency in English including reading and listening, comprehension, writing and speaking skills.

UNIT –I

'The Raman Effect' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary Building: The Concept of Word Formation --The Use of Prefixes and Suffixes.

Grammar: Identifying Common Errors in Writing with Reference to Articles and Prepositions.

Reading: Reading and Its Importance- Techniques for Effective Reading.

Basic Writing Skills: Sentence Structures - Use of Phrases and Clauses in Sentences-Importance of Proper Punctuation- Techniques for writing precisely – Paragraph writing – Types, Structures and Features of a Paragraph - Creating Coherence-Organizing Principles of Paragraphs in documents.

UNIT –II

'Ancient Architecture in India' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Homonyms, Homophones and Homographs. Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives-Words from Foreign Languages and their Use in English.

Grammar: Identifying Common Errors in Writing with Reference to Noun-pronoun Agreement and Subject- Verb Agreement.

Reading: Improving Comprehension Skills – Techniques for Good Comprehension.

Writing: Format of a Formal Letter-Writing Formal Letters - E.g.., Letter of Complaint, Letter of Requisition, Job Application with Resume.

UNIT –III

'Blue Jeans' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Synonyms and Antonyms

Grammar: Identifying Common Errors in Writing with Reference to Misplaced Modifiers and Tenses and **Question Tags.**

Reading: Sub-skills of Reading- Skimming and Scanning.

Writing: Nature and Style of Sensible Writing- Defining- Describing Objects, Places and Events – Classifying- Providing Examples or Evidence, E-mail writing and practices.

UNIT –IV

'What Should You Be Eating' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Idioms and phrases, **Phrasal Verbs** and One-word substitutions.

Grammar: Active voice and Passive voice- Redundancies and Clichés in Oral and Written Communication.

Reading: Comprehension- Intensive Reading and Extensive Reading.

Writing: Writing Practices--Writing Introduction and Conclusion - Essay Writing-Précis Writing.

UNIT –V

'How a Chinese Billionaire Built Her Fortune' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Standard Abbreviations in English and Technical Vocabulary and their usage.

Grammar: Reported speech and Common Errors in English.

Reading: Reading Comprehension-Exercises for practice.

Writing: Report writing - Introduction – Characteristics of a Report – Categories of Reports, Formats- Structure of Reports (Manuscript Format) -Types of Reports - Writing a Report.

Prescribed Textbook:

1. **Sudarshana, N.P. and Savitha, C. (2018). English for Engineers. Cambridge UniversityPress.**

References:

1. Swan, M. (2016). Practical English Usage. Oxford University Press.
2. Kumar, S and Lata, P.(2018). Communication Skills. Oxford University Press.
3. Wood, F.T. (2007).Remedial English Grammar.Macmillan.
4. Zinsser, William. (2001). On Writing Well. Harper Resource Book.
5. Hamp-Lyons, L. (2006).Study Writing. Cambridge University Press.
6. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford University Press.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200BS61: APPLIED PHYSICS LAB

B.TECH I YEAR I SEMESTER. **L T P C**

0 0 3 1.5

List of Experiments

Course Objectives:

1. Students will demonstrate skills in scientific inquiry, problem solving and laboratory techniques.
2. Students will be able to demonstrate competency and understanding of the concepts found in Quantum Mechanics, Fiber optics and lasers, Semiconductor physics and a broad base of knowledge in physics.
3. The graduates will be able to solve non-traditional problems that potentially draw on knowledge in multiple areas of physics.
4. To study applications in engineering like memory devices, transformer core and electromagnetic machinery.

Course Outcomes: Upon graduation

1. The student would be able to learn the fundamental concepts on Quantum behavior of matter in its micro state.
2. The knowledge of fundamentals of Semiconductor physics, Optoelectronics, Lasers and fibre optics enable the students to apply to various systems like communications, solar cell, photo cells and so on.
3. Design, characterization and study of properties of material help the students to prepare new materials for various engineering applications.
4. The course also helps the students to be exposed to the phenomena to have exposure on dielectric materials and magnetic materials.

Note: Any 8 Experiments to be performed

1. **Energy gap of a PN junction diode**

   To determine the energy band gap of a semiconductor p-n junction diode

2. **Solar Cell**

   To study the Characteristics of a given Solar Cell

3. **Light Emitting Diode**

   To study the V-I characteristics of a Light Emitting Diode

4. **Stewart and Gee's Experiment**

   To determine the magnetic induction at the center and at several points on the axis of a circular coil

5. **HALL Effect Experiment**

Determination of hall coefficient and Hall voltage
To calculate the Hall coefficient and the carrier concentration of the sample material.

6. Photoelectric Effect
To determine the work function of a given material.

7. LASER
To study the characteristics of LASER diode Sources.

8. A) Optical Fiber Numerical Aperture
To determine the numerical Aperture (NA) of the given optical fiber

B) Optical Fiber Bending Loss
To determine the loss caused in optical fibers in dB due to macro bending of the fiber

9. A) LCR series Circuit
To study the frequency response of LCR series circuits and to determine the Resonant Frequency.

B) LCR Parallel Circuit
To study the frequency response of LCR parallel circuits and to determine the Resonant Frequency.

10. R-C Circuit
To determine the time constant of the given RC circuit

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200HS61: ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB

B.TECH I YEAR I SEMESTER **L T P C**
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The **Language Lab** focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations both in formal and informal contexts.

Course Objectives:

- To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning
- To sensitize students to the nuances of English speech sounds, word accent, intonation and rhythm
- To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking
- To improve the fluency of students in spoken English and neutralize their mother tongue influence
- To train students to use language appropriately for public speaking and interviews
- To foster better understanding of nuances of English language through audio- visual experience and group activities
- To inculcate neutralization of accent for intelligibility
- To enhance students' speaking skills with clarity and confidence which in turn enhances their employability skills

Syllabus

English Language and Communication Skills Lab (ELCS) shall have two parts:

a. **Computer Assisted Language Learning (CALL)Lab**
b. **Interactive Communication Skills (ICS)Lab**

Listening Skills

Objectives:

1. To enable students develop their listening skills so that they may appreciate its role in the LSRW skills approach to language and improve their pronunciation.
2. To equip students with necessary training in listening so that they can comprehend the

speech of people of different backgrounds and regions.

Students should be given practice in listening to the sounds of the language, to be able to recognize them and find the distinction between different sounds, to be able to mark stress and recognize and use the right intonation in sentences.

- Listening for general content
- Listening to fill up information
- Intensive listening
- Listening for specific information

Speaking Skills

Objectives:

1. To involve students in speaking activities in various contexts
2. To enable students express themselves fluently and appropriately in social and professional contexts

- Oral practice: Just A Minute (JAM)Sessions
- Describing objects/situations/people
- Role play – Individual/Group activities
- Group Discussion – Group activities

Exercise– I CALL

Lab:

Understand: Listening Skill- Its importance – Purpose- Process- Types- Barriers of Listening.
Practice: Introduction to Phonetics – Speech Sounds – Vowels and Consonants.

ICS Lab:

Understand: Communication at Work Place- Spoken vs. Written language.
Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave– Introducing Oneself and Others.

Exercises – II

CALL Lab:

Understand: Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context.
Practice: Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms in Context.

ICS Lab:

Understand: Features of Good Conversation – Non-verbal Communication.
Practice: Situational Dialogues – Role-Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone conversation.

Exercise - III

CALL Lab:

Understand: Intonation-Errors in Pronunciation-the Influence of Mother Tongue (MTI).
Practice: Common Indian Variants in Pronunciation – Differences in British and American Pronunciation.

ICS Lab:
Understand: Telephonic Etiquette, How to make Formal Presentations.
Practice: Formal Telephone conversation and Formal Presentations.

Exercise – IV

CALL Lab:
Understand: Consonant Clusters, Plural and Past tense Markers
Practice: Words often Misspelled – Confused/ Misused.

ICS Lab:
Understand: Public Speaking – Exposure to Structured Talks.
Practice: Making a Short Speech – Extempore.

Exercise – V

CALL Lab:
Understand: Listening for General and Specific Details.
Practice: Listening Comprehension Tests.

ICS Lab:
Understand: Group Discussion *and* Interview Skills.
Practice: Case study Group Discussions *and* Mock Interviews.

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Minimum Requirement of infrastructural facilities for ELCS Lab:

1. Computer Assisted Language Learning (CALL)Lab:

The Computer Assisted Language Learning Lab has to accommodate 40 students with 40 systems, with one Master Console, LAN facility and English language learning software for self- study by students.

System Requirement (Hardware component):

Computer network with LAN facility (minimum 40 systems with multimedia) with the following specifications:

i) Computers with Suitable Configuration
ii) High Fidelity Headphones

2. Interactive Communication Skills (ICS)Lab:

The Interactive Communication Skills Lab: A Spacious room with movable chairs and audio- visual aids with a Public-Address System, a LCD and a projector etc.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2205ES61: PROGRAMMING FOR PROBLEM SOLVING LAB

B.TECH I YEAR I SEMESTER **L T P C**

0 0 3 1.5

Course Objectives: The students will learn the following:

- To work with an IDE to create, edit, compile, run and debug programs
- To analyze the various steps in program development.
- To develop programs to solve basic problems by understanding basic concepts in C like operators, control statements etc.
- To develop modular, reusable and readable C Programs using the concepts like functions, arrays etc.
- To write programs using the Dynamic Memory Allocation concept.
- To create, read from and write to text and binary files

Course Outcomes: The candidate is expected to be able to:

- formulate the algorithms for simple problems
- translate given algorithms to a working and correct program
- correct syntax errors as reported by the compilers
- identify and correct logical errors encountered during execution
- represent and manipulate data with arrays, strings and structures
- use pointers of different types
- create, read and write to and from simple text and binary files
- modularize the code with functions so that they can be reused

Practice sessions:

1. Write a simple program that prints the results of all the operators available in C (including pre/ post increment, bitwise and/or/not, etc.). Read required operand values from standard input.
2. Write a simple program that converts one given data type to another using auto conversion and casting. Take the values form standard input.

Simple numeric problems:

a) Write a program for fiend the max and min from the three numbers.
b) Write the program for the simple, compound interest.
c) WriteprogramthatdeclaresClassawardedforagivenpercentageofmarks,wheremark <40%= Failed, 40% to <60% = Second class, 60% to <70%=First class, >= 70% = Distinction.Read percentage from standard input.
d) Write a program that prints a multiplication table for a given number and the number of rows in the table.

For example, for a number 5 and rows = 3, the output should be:

5 x 1 = 5

5 x 2=10

5 x 3=15

e) Write a program that shows the binary equivalent of a given positive number between 0 to 255.

Expression Evaluation:

i) A building has 10 floors with a floor height of 3 meters each. A ball is dropped from the top of the building. Find the time taken by the ball to reach each floor. (Use the formulas = ut+(1/2)at^2 where u and a are the initial velocity in m/sec (= 0) and acceleration in m/sec^2 (= 9.8m/s^2)).

ii) Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)

iii) Write a program that finds if a given number is a prime number

iv) Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.

v) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.

vi) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

vii) Write a C program to find the roots of a Quadratic equation.

viii) Write a C program to calculate the following, where x is a fractional value. 1-x/2 +x^2/4-x^3/6

ix) WriteaCprogramtoreadintwonumbers,xandn,andthencomputethesumofthis geometricprogression:1+x+x^2+x^3+.....+x^n.Forexample:ifnis3andxis5, then the program computes 1+5+25+125.

Arrays and Pointers and Functions:

a) Write a C program to find the minimum, maximum and average in an array of integers.

b) Write a functions to compute mean, variance, Standard Deviation, sorting of n elements in single dimension array.

c) Write a C program that uses functions to perform the following:

i. Addition of Two Matrices

ii. Multiplication of Two Matrices

iii. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be same.

d) Write C programs that use both recursive and non-recursive functions

To find the factorial of a given integer.

i) To find the GCD (greatest common divisor) of two givenintegers.

ii) To find x^n

e) Write a program for reading elements using pointer into array and display the values using array.
f) Write a program for display values reverse order from array using pointer.
g) Write a program through pointer variable to sum of n elements from array.

Strings

a) Write a C program to convert a Roman numeral ranging from I to L to its decimal equivalent.
b) Write a C program that converts a number ranging from 1 to 50 to Roman equivalent
c) Write a C program that uses functions to perform the following operations:
   - To insert a sub-string in to a given main string from a given position.
   - To delete n Characters from a given position in a given string.
d) Write a C program to determine if the given string is a palindrome or not (Spelled same in both directions with or without a meaning like madam, civic, noon, abcba,etc.)
e) Write a C program that displays the position of a character ch in the string S or – 1 if S doesn‘t contain ch.
f) Write a C program to count the lines, words and characters in a given text.

Structures & Unions:

a) Write a C program that uses functions to perform the following operations using Structure
   - Reading a complex number
   - Writing Complex Number
   - Addition of 2 Complex Numbers
   - Multiplication of two complex numbers
b) Write a C program to store information of 5 students using structures.
c) Write a C program to Access all structures members using pointer structure variable.
d) Write a C program to access members of union?

Files

a) Write a C program to display the contents of a file to standard output device.
b) Write a C program which copies one file to another, replacing all lowercase characters with their upper case equivalents.
c) Write a C program to count the number of times a character occurs in a text file. The file name and the character are supplied as command line arguments.
d) Write a C program that does the following:
e) It should first create a binary file and store 10 integers, where the file name and 10 values aregiveninthecommandline.(hint:convertthestringsusingatoifunction)Nowthe

   program asks for an index and a value from the user and the value at that index should be changed to the new value in the file. (hint: use fseek function).The program should then read all 10 values and print them back.
f) Write a C program to merge two files into a third file (i.e., the contents of the firs t file

followed by those of the second are put in the third file).

Miscellaneous:

a. Write a menu driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choices are to be functions. Use a switch statement to determine what action to take. Display an error message if an invalid choice is entered.
b. Write a C Program to construct a pyramid of numbers as follows:1

```
*       1       1       *
* *     2 3     2 2     * *
* * *   4 5 6   3 3 3   * * *
                4 4 4 4 * * * *
```

c. Write a C Program implement Student Data Base System Using Files &Structures.

Sorting and Searching:

a. Write a C program that uses non recursive function to search for a Key value in a given list of integers using linear search method.
b. Write a C program that uses non recursive function to search for a Key value in a given sorted list of integers using binary search method.
c. Write a C program that implements the Bubble sort method to sort a given list of integers in ascending order.
d. Write a C program that sorts the given array of integers using selection sort in descending order
e. Write a C program that sorts the given array of integers using insertion sort in ascending order
f. Write a C program that sorts a given array of names

Suggested Reference Books for solving the problems:

i. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill
ii. B.A. Forouzan and R.F. Gilberg C Programming and Data Structures, Cengage Learning, (3rd Edition)
iii. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India
iv. R.G. Dromey, How to solve it by Computer, Pearson(16thImpression)
v. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
vi. Herbert Schildt, C: The Complete Reference, Mc Graw Hill,4thEdition

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200MC02: FRENCH LANGUAGE

B.TECH I YEAR I SEMESTER **L T P C**

2 0 0 0

Introduction:

In view of the growing importance of foreign languages as a communication tool in some countries of the world, French has been identified as one of the most popular languages after English. As a result, French program is introduced to develop the linguistic and communicative skills of engineering students and to familiarize them to the French communication skills. This course focuses on basic oral skills.

Course Objectives:

- To inculcate the basic knowledge of the French language.
- To hone the basic sentence constructions in day to day expressions for communication in their vocation.

Course Outcomes

- The students will be able to communicate in French at A1level.
- The student will have an advantage in the competitive job market.
- This course benefits the graduates when pursuing study *opportunities* in the countries where French is the official language.

UNIT - I:

Speaking: Introduction to the French language and culture – Salutations - French alphabet - Introducing people

Writing: Understand and fill out a form

Grammar: The verbs “to be ' and “to have " in the present tense of the indicative Vocabulary:The numbers from 1 to 20 - Professions - Nationalities

UNIT - II:

Speaking: Talk about one’s family – description of a person - express his tastes and preferences -express possession - express negation Writing:

Write and understand a short message

Grammar: Nouns (gender and number) - Articles - The –er verbs in the present – Possessive adjectives - Qualifying adjectives

Vocabulary: The family – Clothes - Colors - The numbers from 1 to 100 - The classroom

UNIT - III

Speaking: Talk about your daily activities - be in time - ask and indicate the date and time –talk about sports and recreation - express the frequency Writing: A letter to a friend

Grammar - The expression of time – Their verbs in the present - The verbs do, go, take, come, -Adverbs - Reflexive verbs

Vocabulary - The days and months of theyear-The sports -Hobbies

UNIT - IV

Speaking: Express the quantity - ask and give the price - express the need, the will and thecapacity - compare (adjective) - speak at the restaurant / in the shops

Writing: A dialogue between a vendor and a customer at the market

Grammar: Verbs "to want", "to can" - Express capacity / possibility - Express will / desire –the future tense

Vocabulary: The food – Meals - Fruits and vegetables – The parts of the body

UNIT - V

Speaking: Express the prohibition and the obligation - describe an apartment - talk about the weather / ask the weather - ask the opinion - give your opinion - express your agreement or disagreement

Writing: Descriptions

Grammar: Demonstrative adjectives -Prepositions - The verb 'must' to indicate obligation and necessity in the present

Vocabulary: Seasons – Holidays - The city – Furniture

NOTE: The students are exposed to simple listening and reading activities.

REFERENCE BOOKS

1. Apprenons le Français 1& 2, New Saraswati House,2015
2. A propos, A1, Langers International,2010
3. Easy French Step-by-step by Myrna Bell Rochester
4. Ultimate French Beginner-Intermediate (Course book) By Livid Language
5. Ã L' Aventure: An Introduction to French Language and Francophone Cultures by Evelyne Charvier-Berman, Anne C. Cummings.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200BS03: ADVANCED CALCULUS & TRANSFORM TECHNIQUES

B.TECH I YEAR II SEMESTER **L T P C**
3 1 0 4

Course Objectives: To learn

- Geometrical approach to the mean value theorems, their application to the mathematical problems and Evaluation of improper integrals using Beta and Gamma functions
- Evaluation of multiple integrals and their applications.
- The physical quantities involved in engineering field related to vector valued functions and their applications to line, surface and volume integrals.
- A periodic function by Fourier series and a non-periodic function by Fourier transform and properties.
- Properties of Laplace transforms, solving ordinary differential equations using Laplace transforms techniques. Also, Z- transform of a sequence and properties.

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

- Solve the applications on mean value theorems and evaluate the improper integrals using Beta and Gamma functions
- Evaluate the multiple integrals and apply the concept to find areas, volumes.
- Find the directional derivatives, Irrotational and Solenoidal functions and angle between the surfaces. Evaluate the line, surface and volume integrals and converting them from one to another.
- Express any periodic function in terms of Sines and Cosines and express a non-periodic function as integral transform.
- Use the Laplace transform techniques for solving ODE's and sequence as Z – transforms.

UNIT-I:

Differential Calculus: Rolle's theorem (without proof), Lagrange's Mean value theorem (without proof) with their Geometrical Interpretation, Cauchy's Mean value Theorem (without proof). Definition of Improper Integral; Definition of Beta and Gamma functions, properties, relation between them.

UNIT-II:

Multiple Integrals: Evaluation of Double Integrals (Cartesian); Change of order of integration (only Cartesian form); Evaluation of Triple Integrals.Areas (by double integrals) and Volumes (by double integrals and triple integrals).

UNIT-III:

Vector Differentiation: Vector point functions and Scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Scalar potential functions.

Vector Integration: Line and Surface integrals

UNIT – IV

Fourier series: Introduction, Fourier series definition, Dirichlet's conditions, Even and odd functions.

Fourier Transforms: Fourier integral theorem (without proof), Fourier sine and cosine integrals, sine and cosine transforms, properties, inverse Fourier transforms.

UNIT – V

Laplace Transforms:

Definition of Laplace transform, Laplace transform of standard functions, and properties Definition of Inverse Laplace transform ,Inverse Laplace transforms of standard functions Convolution theorem, Solution of ordinary differential equations by Laplace transforms.

Z- transforms: Z- transforms inverse z-transforms, properties .convolution theorem, solution of difference equation by z-transforms.

TEXTBOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition, 2010.
2. R. K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics, Narosa Pubishers, 4th Edition, 2014.

REFERENCES:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
2. Staff, E. B. and A. D. Snider , Fundamentals of Complex Analysis , Pearson.
3. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2205ES02: PYTHON PROGRAMMING

B.TECH I YEAR II SEMESTER **L T P C**
3 0 0 3

Course Objectives:

This course will enable students to

- Learn Syntax and Semantics and create Functions in Python.
- Handle Strings and Files in Python.
- Understand Lists, Dictionaries and Regular expressions in Python.
- Implement Object Oriented Programming concepts in Python.
- Build GUI Programming in Python.

Course Outcomes:

The students should be able to

- Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
- Demonstrate proficiency in handling Strings and File Systems.
- Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
- Interpret the concepts of Object-Oriented Programming as used in Python.
- Implement exemplary applications related to Graphical User Interface (GUI) in Python.

UNIT I

PYTHON Programming Introduction, History of Python, Python is Derived from?, Python Features, Python Applications, Why Python is Becoming Popular Now a Day?, Existing Programming Vs Python Programming, Writing Programs in Python, Top Companies Using Python, Python Programming Modes, Interactive Mode Programming, Scripting Mode Programming, Flavors in Python, Python Versions, Download & Install the Python in Windows & Linux, How to set Python Environment in the System?, Anaconda - Data Science Distributor, Downloading and Installing Anaconda, Jupyter Notebook & Spyder, Python IDE - Jupyter Notebook Environment, Python IDE – Spyder Environment, Python Identifiers(Literals), Reserved Keywords, Variables, Comments, Lines and Indentations, Quotations, Assigning Values to Variables

UNIT II

Data Types in Python, Mutable Vs Immutable, and Fundamental Data Types: int, float, complex, bool, str, Number Data Types: Decimal, Binary, Octal, Hexa Decimal & Number Conversions,

Inbuilt Functions in Python, Data Type Conversions, Priorities of Data Types in Python, Python Operators, Arithmetic Operators, Comparison (Relational) Operators, Assignment

Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Slicing & Indexing, Forward Direction Slicing with +ve Step, Backward Direction Slicingwith -ve Step, Decision Making Statements, if Statement, if-else Statement, elif Statement, Looping Statements, Why we use Loops in python?, Advantages of Loops
for Loop, Nested for Loop, Using else Statement with for Loop, while Loop, Infinite while Loop, Using else with Python while Loop, Conditional Statements, break Statement, continue Statement, Pass Statement

UNIT III

Advanced Data Types: List, Tuple, Set, Frozenset, Dictionary, Range, Bytes & Bytearray, None, List Data Structure, List indexing and splitting Updating List values, List Operations, Iterating a List, Adding Elements to the List, Removing Elements from the List, List Built-in Functions, List Built-in Methods, Tuple Data Structure, Tuple Indexing and Splitting, Tuple Operations, Tuple Inbuilt Functions, Where use Tuple, List Vs Tuple, Nesting List and Tuple, Set Data Structure, Creating a Set, Set Operations, Adding Items to the Set, Removing Items from the Set, Difference Between discard() and remove(), Union of Two Sets, Intersection of Two Sets, Difference of Two Sets, Set Comparisons, Frozenset Data Structure, Dictionary Data Structure, Creating the Dictionary, Accessing the Dictionary Values, Updating Dictionary Values, Deleting Elements Using del Keyword, Iterating Dictionary, Properties of Dictionary Keys, Built-in Dictionary Functions, Built-in Dictionary Methods, List Vs Tuple Vs Set Vs Frozenset Vs Dictionary, Range, Bytes, Bytearray & None

UNIT IV

Python Functions, Advantage of Functions in Python, Creating a Function, Function Calling, Parameters in Function, Call by Reference in Python, Types of Arguments, Required Arguments, Keyword Arguments, Default Arguments, Variable-Length Arguments, Scope of Variables, Python Built-in Functions, Python Lambda Functions, String with Functions, Strings Indexing and Splitting String Operators, Python Formatting Operator, Built-in String Functions, Python File Handling, Opening a File, Reading the File, Read Lines of the File, Looping through the File, Writing the File, Creating a New File Using with Statement with Files, File Pointer Position, Modifying File Pointer Position Renaming the File & Removing the File, Writing Python Output to the Files File Related Methods, Python Exceptions, Common Exceptions, Problem without Handling Exceptions, except Statement with no Exception, Declaring Multiple Exceptions, Finally Block, Raising Exceptions, Custom Exception,

UNIT V

Python Packages, Python Libraries, Python Modules, Collection Module, Math Module, OS Module, Random Module, Statistics Module, Sys Module, Date & Time Module, Loading the Module in our Python Code, import Statement, from-import Statement, Renaming a Module, Regular Expressions, Command Line Arguments, Object Oriented Programming (OOPs), Object-oriented vs Procedure-oriented Programming languages, Object, Class, Method,

Inheritance, Polymorphism, Data Abstraction, Encapsulation, Python Class and Objects, Creating Classes in Python, Creating an Instance of the Class, Python Constructor, Creating the, Constructor in Python, Parameterized Constructor, Non-Parameterized Constructor, In-built Class Functions, In-built Class Attributes, Python Inheritance, Python Multi-Level Inheritance, Python Multiple Inheritance, Method Overriding, Data Abstraction in Python, Graphical User Interface (GUI) Programming, Python Tkinter, Tkinter Geometry, pack()

Method, grid() Method, place() Method, Tkinter Widgets

TEXT BOOK:

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson

REFERENCE BOOK:

1. Programming Languages, A.B. Tucker, R.E. Noonan, TMH.
2. Programming Languages, K. C. Louden and K A Lambert., 3rd edition, Cengage Learning.
3. Programming Language Concepts, C Ghezzi and M Jazayeri, Wiley India.
4. Programming Languages 2nd Edition Ravi Sethi Pearson.
5. Introduction to Programming Languages Arvind Kumar Bansal CRC Press.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2202ES01: BASIC ELECTRICAL ENGINEERING

B.TECH I YEAR II SEMESTER **L T P C**
3 1 0 3

Course Objectives:

1. To introduce the concepts of electrical circuits and its components
2. To understand DC circuits and AC single phase & three phase circuits
3. To study and understand the different types of DC/AC machines and Transformers.
4. To import the knowledge of various electrical installations.
5. To introduce the concept of power, power factor and its improvement.

Course Outcomes:

After learning the course the student will be able to

1. Analyze and solve electrical circuits using network laws and theorems.
2. Understand and analyze basic electric circuits
3. Study the working principles of various electrical machines
4. Introduce components of Low Voltage Electrical Installations

UNIT-I:

D.C. Circuits: Electrical circuit elements (R, L and C), voltage and current sources, KVL&KCL, analysis of simple circuits with DC excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits.

UNIT-II

A.C. Circuits: Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor, Analysis of single- phase AC circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance in series RLC circuit. Three-phase balanced circuits, voltage and current relations in star and delta connections.

UNIT-III:

Transformers: Ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

UNIT-IV:

Electrical Machines: Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited DC motor. Construction and working of synchronous generators.

UNIT-V:

Electrical Installations: Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement.

Text-Books:

1. Basic Electrical Engineering - D.P. Kothari and I.J. Nagrath, 3rd edition 2010, Tata McGrawHill.
2. D.C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill,2009.
3. L.S. Bobrow, Fundamentals of Electrical Engineering", Oxford University Press,2011

Reference-Books:

1. Electrical and Electronics Technology, E. Hughes, 10th Edition, Pearson,2010
2. Electrical Engineering Fundamentals, Vincent Deltoro, Second Edition, Prentice Hall India,1989.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200BS07 : ENGINEERING CHEMISTRY

B.TECH I YEAR II SEMESTER **L T P C**
3 0 0 3

COURSE OBJECTIVES: To learn

- To bring adaptability to the concepts of chemistry and to acquire the required skills to become a perfect engineer.
- To impart the basic knowledge of atomic, molecular and electronic modifications which makes the student to understand the technology based on them.
- To acquire the knowledge of electrochemistry, corrosion and water treatment which are essential for the Engineers and in industry.
- To acquire the skills pertaining to spectroscopy and to apply them for medical and other fields.
- To impart the knowledge of stereochemistry and synthetic aspects useful for understanding reaction pathways

COURSE OUTCOMES:

The basic concepts included in this course will help the student to gain:

- The knowledge of atomic, molecular and electronic changes, band theory related to conductivity.
- To know the modern technology and interpret different problems involved in industrial utilization of water.
- The required principles and concepts of electrochemistry, corrosion to predict the behavior of a system under different variables.
- The knowledge of configurational and conformational analysis of molecules and reaction mechanisms.
- The required skills to get clear concepts on basic spectroscopy and application to medical and other fields.

UNIT - I:

Molecular structure and Theories of Bonding: Atomic and Molecular orbital's. Linear Combination of Atomic Orbital's (LCAO), molecular orbital's of diatomic molecules, molecular orbital energy level diagrams of N_2, O_2 and F_2 molecules. π molecular orbital's of butadiene and benzene.

Crystal Field Theory (CFT): Salient Features of CFT – Crystal Field Splitting of transition metal ion d-orbital's in Tetrahedral, Octahedral and square planar geometries. Band structure of solids and effect of doping on conductance.

UNIT - II:

Water and its treatment: Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and units of hardness – Estimation of hardness of water by complexo metric method. Potable water and its specifications. Boiler troubles: Scales and Sludge's,

Priming and Foaming, Caustic Embrittlement. Steps involved in treatment of water – Disinfection of water by chlorination and ozonization. Boiler feed water and its treatment – Calgon conditioning, Phosphate conditioning and Colloidal conditioning. External treatment of water – Ion exchange process. Desalination of water – Reverse osmosis. Numerical problems.

UNIT - III:

Electrochemistry and corrosion: Electro chemical cells – electrode potential, standard electrode potential, types of electrodes – Calomel, Quinhydrone and Glass electrode. Nernst equation, Determination of pH of a solution by using quinhydrone and glass electrode. Electrochemical series and its applications. Numerical problems. Potentiometric titrations.

Electrochemical sensors: Potentiometric Sensors and voltametric sensors. Examples:analysis of Glucose and urea.

Batteries – Primary: Lithium cell, secondary batteries : Lead – acid storage battery and Lithium ion battery, Fuel cells: H_2-O_2 Fuel cell, CH_3OH-O_2 Fuel cell.

Causes and effects of corrosion – Theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Cathodic protection – Sacrificial anode and impressed current cathodic methods. Surface coatings – metallic coatings – methods of application: Galavanising , Tinning , Metal Cladding, Electro-deposition, Electroless plating of Nickel.

UNIT - IV:

Stereochemistry, Reaction Mechanism and synthesis of drug molecules: Introduction to representation of 3-dimensional structures, Structural and stereoisomers, configurations, symmetry and chirality. Enantiomers, diastereomers, optical activity and Absolute configuration. Conformation analysis of n- butane.

Substitution reactions: Nucleophilic substitution reactions: Mechanism of SN^1, SN^2 reactions.

Electrophilic and nucleophilic addition reactions: Addition of HBr to propene. Markownikoff and anti Markownikoff's additions. Grignard additions on carbonyl compounds. Elimination reactions: Dehydro halogenation of alkylhalides, Saytzeff rule. Oxidation reactions: Oxidation of alcohols using $KMnO_4$ and chromic acid. Reduction reactions: Reduction of carbonyl compounds using $LiAlH_4$ & $NaBH_4$.Hydroboration of olefins. Structure, synthesis and pharmaceutical applications of Paracetamol and Aspirin.

UNIT – V

Spectroscopic techniques and applications: Principles of electronic spectroscopy: Beer Lamberts law, Numerical problems, types of electronic excitations , applications of UV –Visible spectroscopy. IR Spectroscopy: Principle, Modes of vibrations, selection rules, Force Constant ,Some common organic functional groups Wave number regions (C-H, NH_2, OH, -COOH, C=O, C ≡ N, C=C, C ≡ C), Applications of IR Spectroscopy, ^{1}H-NMR(NMR Spectroscopy), Principles of NMR spectroscopy, chemical shift, Chemical shifts of some organic protons , Introduction to Magnetic resonance imaging.

Suggested Text Books:

1. Physical Chemistry, by P.W. Atkins

2. Engineering Chemistry by P.C.Jain & M.Jain; Dhanpat Rai Publishing Company (P)Ltd., New Delhi.
3. Fundamentals of Molecular Spectroscopy, by C.N. Banwell
4. Organic Chemistry: Structure and Function by K.P.C. Volhardt and N.E.Schore, 5th Edition.
5. University Chemistry, by B.M. Mahan, Pearson IV Edition.
6. Engineering Chemistry (NPTEL Web-book), by B.L. Tembe, Kamaluddin and M.S.Krishnan. ॥

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2203ES61: ENGINEERING WORKSHOP

B.TECH I YEAR II SEMESTER **L T P C**
1 0 3 2.5

COURSE OBJECTIVES:

1. To Study of different hand operated power tools, uses and their demonstration.
2. To gain a good basic working knowledge required for the production of various engineering products.
3. To provide hands on experience about use of different engineering materials, tools, equipment's and processes those are common in the engineering field.
4. To develop a right attitude, team working, precision and safety at work place.
5. To study commonly used carpentry joints and to have practical exposure to various welding and joining processes.

COURSE OUTCOMES: At the end of the course, the student will be able to:

1. Study and practice on machine tools and their operations
2. Practice on manufacturing of components using workshop trades including pluming, fitting, carpentry, foundry, house wiring and welding.
3. Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.
4. Apply basic electrical engineering knowledge for house wiring practice.
5. Study commonly used carpentry joints.

I. Carpentry

1. Cross lap joint
2. Mortise & tenon joint

II. Fitting

1. V- fitting
2. Semi - Circular Fitting

III. Tin Smithy

1. Making of Rectangular Tray
2. Making of Conical Funnel

IV. Housing wiring

1. Two points controlled by two-one way switches (parallel connection)
2. One point controlled by two-two way switches (stair case connection)

V. Foundry

1. Single piece pattern
2. Multi-piece pattern

VI. Black Smithy

1. Round to Square
2. S - Hook

Trades for Demonstration:

1. Plumbing
2. Welding
3. Machine Shop
4. Metal Cutting (Water Plasma)

TEXT BOOKS:

1. Workshop Manual, P. Kannaiah and K. L. Narayana, 3rd Edition, Scitech, 2015
2. Elements of Workshop Technology Vol.1 & 2, S. K. Hajra Choudhury, A. K. Hajra Choudhury and Nirjhar Roy, 13th Edition, Media Promoters & Publishers Pvt. Ltd., 2010.

REFERENCE BOOKS:

1. Workshop Manual / Venkat Reddy/ BSP
2. Workshop Manual / K Venu Gopal / Anuradha

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2202ES61: BASIC ELECTRICAL ENGINEERING LAB

B.TECH I YEAR II SEMESTER **L T P C**
0 0 2 1

Course Objectives:

1. To analyze a given network by applying various electrical laws and network theorems
2. To know the response of electrical circuits for different excitations
3. To calculate, measure and know the relation between basic electrical parameters.
4. To analyze the performance characteristics of DC and AC electrical machines

Course Outcomes:

After learning the lab course the student will be able to

1. Get an exposure to basic electrical laws.
2. Understand the response of different types of electrical circuits to different excitations.
3. Understand the measurement, calculation and relation between the basic electrical parameters
4. Understand the basic characteristics of transformers and electrical machines.

List of experiments/demonstrations

1. Verification of Ohms Law
2. Verification of KVL and KCL
3. Transient Response of Series RL and RC circuits using DC excitation
4. Transient Response of RLC Series circuit using DC excitation
5. Resonance in series RLC circuit
6. Calculations and Verification of Impedance and Current of RL, RC and RLC series circuits
7. Measurement of Voltage, Current and Real Power in primary and Secondary Circuits of a Single Phase Transformer
8. Load Test on Single Phase Transformer (Calculate Efficiency and Regulation)
9. Three Phase Transformer: Verification of Relationship between Voltages and Currents (Star-Delta, Delta-Delta, Delta-star, Star-Star)
10. Measurement of Active and Reactive Power in a balanced Three-phase circuit
11. Performance Characteristics of a Separately/Self Excited DC Shunt/Compound Motor
12. Torque-Speed Characteristics of a Separately/Self Excited DC Shunt/Compound Motor
13. Performance Characteristics of a Three-phase Induction Motor
14. Torque-Speed Characteristics of a Three-phase Induction Motor
15. No-Load Characteristics of a Three-phase Alternator

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2205ES62: PYTHON PROGRAMMING LAB

B.TECH I YEAR II SEMESTER **L T P C**

0 0 3 1.5

Course Objectives:

- Introduce core programming basics and program design with functions using Python programming language.
- To understand a range of Object-Oriented Programming, as well as in-depth data and information processing techniques.
- To understand the high-performance programs designed to strengthen the practical expertise.

Course Outcomes:

- Student able to understand the basic concepts scripting and the contributions of scripting language
- Ability to explore python especially the object oriented concepts, and the built in objects of Python.
- Ability to create practical and contemporary applications such as TCP/IP network programming, Web applications, discrete event simulations

Week 1:

1. Python program to print "Hello Python"
2. Write a program that computes and prints the result of $512 - 282 / 47 \cdot 48 + 5$.
   It is roughly .1017
3. Ask the user to enter a number. Print out the square of the number but use the sep optional argument to print it out in a full sentence that ends in a period. Sample output is shown below.
   Enter a number: 5
   The square of 5 is 25.
4. Ask the user to enter a number x. Use the sep optional argument to print out x, 2x, 3x, 4x, and 5x, each separated by three dashes, like below.
   Enter a number: 7
   7---14---21---28---35

Week 2:

1. Write a program that asks the user to enter three numbers (use three separate input statements). Create variables called total and average that hold the sum and average of the three numbers and print out the values of total and average.
2. A lot of cell phones have tip calculators. Write one. Ask the user for the price of the meal and the percent tip they want to leave. Then print both the tip amount and the total bill with the tip included.
3. Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5,between 2000 and 3200 (both included). The numbers obtained should be printed in a comma-separated sequence on a single line.

Hints: Consider use range(#begin, #end) method

4. Write a program that calculates and prints the value according to the given formula: Q = Square root of [(2 * C * D)/H]
   Following are the fixed values of C and H:C is 50. H is 30.D is the variable whose values should be input to your program in a comma-separated sequence, let us assume the following comma separated input sequence is given to the program: 100,150,180The output of the program
   Hint:
   If the output received is in decimal form, it should be rounded off to its nearest value (for example, if the output received is 26.0, it should be printed as 26)18, 22,24should be:

Week 3:

1. Write a program that asks the user to enter a length in centimeters. If the user enters a negative length, the program should tell the user that the entry is invalid. Otherwise, the program should convert the length to inches and print out the result. There are 2.54 centimeters in an inch.
2. Ask the user for a temperature. Then ask them what units, Celsius or Fahrenheit, the temperature is in. Your program should convert the temperature to the other unit. The conversions are F = 9 5 C + 32 and C = 5 9 (F − 32)
3. Ask the user to enter a temperature in Celsius. The program should print a message based on the temperature: • If the temperature is less than -273.15, print that the temperature is invalid because it is below absolute zero. • If it is exactly -273.15, print that the temperature is absolute 0. • If the temperature is between -273.15 and 0, print that the temperature is below freezing. • If it is 0, print that the temperature is at the freezing point. • If it is between 0 and 100, print that the temperature is in the normal range. • If it is 100, print that the temperature is at the boiling point. • If it is above 100, print that the temperature is above the boiling point
4. Write a program that asks the user how many credits they have taken. If they have taken 23 or less, print that the student is a freshman. If they have taken between 24 and 53, print that they are a sophomore. The range for juniors is 54 to 83, and for seniors it is 84 and over.

Week 4:

1. A year is a leap year if it is divisible by 4, except that years divisible by 100 are not leap years unless they are also divisible by 400. Write a program that asks the user for a year and prints out whether it is a leap year or not
2. Write a multiplication game program for kids. The program should give the player ten randomly generated multiplication questions to do. After each, the program should tell them whether they got it right or wrong and what the correct answer is.

Question 1: 3 x 4 = 12
Right!
Question 2: 8 x 6 = 44
Wrong.
The answer is 48.
...

...

Question 10: 7 x 7 = 49

Right.

3. A jar of Halloween candy contains an unknown amount of candy and if you can guess exactly how much candy is in the bowl, then you win all the candy. You ask the person in charge the following: If the candy is divided evenly among 5 people, how many pieces would be left over? The answer is 2 pieces. You then ask about dividing the candy evenly among 6 people, and the amount left over is 3 pieces. Finally, you ask about dividing the candy evenly among 7 people, and the amount left over is 2 pieces. By looking at the bowl, you can tell that there are less than 200 pieces. Write a program to determine how many pieces are in the bowl

   Write a program that asks the user to enter a value n, and then computes (1+ 1 2 + 1 3 +⋯+ 1 n)− ln(n). The ln function is log in the math module

Week 5:

1. A number is called a perfect number if it is equal to the sum of all of its divisors, not including the number itself. For instance, 6 is a perfect number because the divisors of 6 are 1, 2, 3, 6 and 6 = 1 + 2 + 3. As another example, 28 is a perfect number because its divisors are 1, 2, 4, 7, 14, 28 and 28 = 1 + 2 + 4 + 7 + 14. However, 15 is not a perfect number because its divisors are 1, 3, 5, 15 and 15 6= 1 + 3 + 5. Write a program that finds all four of the perfect numbers that are less than 10000.
2. . Ask the user to enter 10 test scores. Write a program to do the following:
   (a) Print out the highest and lowest scores.
   (b) Print out the average of the scores.
   (c) Print out the second largest score.
   (d) If any of the scores is greater than 100, then after all the scores have been entered, print a message warning the user that a value over 100 has been entered.
   (e) Drop the two lowest scores and print out the average of the rest of them
3. Write a program that computes the factorial of a number. The factorial, n!, of a number n is the product of all the integers between 1 and n, including n. For instance, 5! = 1 · 2 · 3 · 4 · 5 = 120. [Hint: Try using a multiplicative equivalent of the summing technique.]

Week 6:

1. Write a program that asks the user for a number and then prints out the sine, cosine, and tangent of that number.
2. The Fibonacci numbers are the sequence below, where the first two numbers are 1, and each number thereafter is the sum of the two preceding numbers. Write a program that asks the user how many Fibonacci numbers to print and then prints that many.
   1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89 . . .
3. Use a for loop to print a triangle like the one below. Allow the user to specify how high the triangle should be.

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

Week 7:

1. Use for loops to print a diamond like the one below. Allow the user to specify how high the diamond should be.

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

2. Write a program that asks the user to enter an angle between -180° and 180° . Using an expression with the modulo operator, convert the angle to its equivalent between 0° and 360° .
3. (a) One way to find out the last digit of a number is to mod the number by 10. Write a program that asks the user to enter a power. Then find the last digit of 2 raised to that power.

   (b) One way to find out the last two digits of a number is to mod the number by 100. Write a program that asks the user to enter a power. Then find the last two digits of 2 raised to that power.

   (c) Write a program that asks the user to enter a power and how many digits they want. Find the last that many digits of 2 raised to the power the user entered

Week 8:

1. The GCD (greatest common divisor) of two numbers is the largest number that both are divisible by. For instance, gcd(18, 42) is 6 because the largest number that both 18 and 42 are divisible by is 6. Write a program that asks the user for two numbers and computes their gcd. Shown below is a way to compute the GCD, called Euclid's Algorithm.
   - First compute the remainder of dividing the larger number by the smaller number
   - Next, replace the larger number with the smaller number and the smaller number with the remainder.
   - Repeat this process until the smaller number is 0. The GCD is the last value of the larger number.
2. Write a program that asks the user to enter a string. The program should then print the following:
   (a) The total number of characters in the string
   (b) The string repeated 10 times
   (c) The first character of the string (remember that string indices start at 0)
   (d) The first three characters of the string
   (e) The last three characters of the string
   (f) The string backwards
   (g) The seventh character of the string if the string is long enough and a message otherwise
   (h) The string with its first and last characters removed
   (i) The string in all caps
   (j) The string with every a replaced with an e

(k) The string with every letter replaced by a space

Week 9:

1. Write a program that asks the user to enter a string. The program should create a new string called new string from the user's string such that the second character is changed to an asterisk and three exclamation points are attached to the end of the string. Finally, print new string. Typical output is shown below: Enter your string: Qbert Q*ert!!!
2. Write a program that computes the net amount of a bank account based a transaction log from console input. The transaction log format is shown as following:
   D 100 W 200 D means deposit while W means withdrawal.
   Suppose the following input is supplied to the program:D 300D 300 W200D 100Then, the output should be: 500

Week 10:

1. A website requires the users to input username and password to register. Write a program to check the validity of password input by users.
   Following are the criteria for checking the password:
   1. At least 1 letter between [a-z]
   2. At least 1 number between [0-9]
   1. At least 1 letter between [A-Z]
   3. At least 1 character from [$#@]
   4. Minimum length of transaction password: 6
   5. Maximum length of transaction password: 12

   Your program should accept a sequence of comma separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma.
   Example
   If the following passwords are given as input to the program:
   ABd1234@1,a F1#,2w3E*,2We3345

   Then, the output of the program should be:
   ABd1234@1
2. Write a program that accepts sequence of lines as input and prints the lines after making all characters in the sentence capitalized
   Suppose the following input is supplied to the program:
   Hello world
   Practice makes perfect
   Then, the output should be:
   HELLO WORLD
   PRACTICE MAKES PERFECT

3. The goal of this exercise is to see if you can mimic the behavior of the in operator and the count and index methods using only variables, for loops, and if statements.
   (a) Without using the in operator, write a program that asks the user for a string and a letter and prints out whether the letter appears in the string.
   (b) Without using the count method, write a program that asks the user for a string and

a letter and counts how many occurrences there are of the letter in the string.

(c) Without using the index method, write a program that asks the user for a string and a letter and prints out the index of the first occurrence of the letter in the string. If the letter is not in the string, the program should say so.

TEXT BOOK:

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200BS62: ENGINEERING CHEMISTRY LAB

B.TECH I YEAR II SEMESTER **L T P C**
0 0 2 1

COURSE OBJECTIVES:

The course consists of experiments related to the principles of chemistry required for engineering student. The student will learn:

- Estimation of hardness and chloride content in water to check its suitability for drinking purpose.
- To determine the rate constant of reactions from concentrations as an function of time.
- The measurement of physical properties like adsorption and viscosity.
- To synthesize the drug molecules and check the purity of organic molecules by thin layer chromatographic (TLC) technique.

COURSE OUTCOMES:

1) Ability to perform experiments illustrating the principles of chemistry relevant to the study of science and engineering.
2) To record the amount of hardness and chloride content in water and interpret the significance of its presence in water.
3) Understand the kinetics of a reaction from a change in concentration of reactants or products as a function of time .
4) To report and predict the significance of properties like adsorption ,conductance ,viscosity, pH and surface tension.
5) To demonstrate the technique of thin Layer Chromotograhy (TLC) and synthesise drug molecules widely used in industry.

List of Experiments

1. Determination of total hardness of water by complexometric method using EDTA
2. Determination of chloride content of water by Argentometry
3. Estimation of an HCl by Conductometric titrations
4. Estimation of Acetic acid by Conductometric titrations
5. Estimation of HCl by Potentiometric titrations
6. Estimation of Fe^{2+} by Potentiometry using $KMnO_4$
7. Determination of rate constant of acid catalysed hydrolysis of methyl acetate
8. Synthesis of Aspirin and Paracetamol
9. Thin layer chromatography calculation of R_f values. eg ortho and para nitro phenols

10. Determination of acid value of coconut oil
11. Verification of freundlich adsorption isotherm-adsorption of acetic acid on charcoal
12. Determination of viscosity of castor oil and ground nut oil by using Ostwald's viscometer.
13. Determination of partition coefficient of acetic acid between n-butanol and water.
14. Determination of surface tension of a give liquid using stalagmometer.

References

1. Senior practical physical chemistry, B.D. Khosla, A.Gulati and V.Garg (R. Chand & Co., Delhi)
2. An introduction to practical chemistry, K.K. Sharma and D. S.Sharma (Vikas publishing, N. Delhi)
3. Vogel's text book of practical organic chemistry 5th edition
4. Text book on Experiments and calculations in Engineering chemistry – S.S. Dara.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200MC01: ENVIRONMENTAL SCIENCE

B.TECH I YEAR II SEMESTER **L T P C**
1 0 0 0

COURSEOBJECTIVES:

- Understandingtheimportanceofecologicalbalanceforsustainabledevelopment.
- Recognize ,the significance of natural resources, their classifications. Alternative energy for the sustainability of the environment by appropriate maintance of natural resources.
- Understand the biodiversity & type of biodiversity along with the value &conservation of biodiversity
- Categorize, the type of environmental pollution & various treatment technologies for diminution of environmental pollutants summarize the global environmental issues
- Understand the sustainable development concept & importance of green buildings ,EIA, EIS,EMP.

COURSEOUTCOMES:

- Understand the scarcity of natural resources and will be able to replace them with alternative energy resources for the sustainability of environmental society & economy
- Recognize the type of biodiversity along the values & conservation biodiversity and know about the biogeographical regions
- Categorize the types of environmental pollution & the various treatment technologies for the diminution of environmental pollutants and contaminants
- Summarize the global environmental issues to create awareness about the international conventions and protocols for extenuating global environmental issues
- Understand the importance of environmental legislation policies, sustainable development and concept of green building

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, Biomagnifications, ecosystem value, services and carrying capacity, Field visits.

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 resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and eco system 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-wild life conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: **Environmental Pollution:** Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards.**Water pollution**: Sources and types of pollution, drinking water quality standards. **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:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances(ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT-V

Environmental Policy, Legislation & EIA: 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). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXTBOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Raja gopalan, Oxford University Press.

REFERENCEBOOKS:

1. Environmental Science :towards a sustainable future by Richard T.Wright. 2008PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M.Masters and Wendel lP.Ela. 2008PHI Learning Pvt.Ltd.
3. Environmental Science by Daniel B.Botkin & EdwardA.Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4thEdition, New age international publishers.

5. Textbook of Environmental Science and Technology-Dr.M.Anji Reddy2007, BS Publications.
6. Introduction to Environmental Science by Y.Anjaneyulu, BS. Publications.

ECE

SYLLABUS

B.Tech– II YEAR

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(Autonomous Institution-UGC, Govt. of India)

B.Tech. II Year I Sem. **L / T/ P/ C**
3/ 1 / 0/ 4

(2200BS03) MATHEMATICS - III
(Complex Analysis & Transform Techniques)

Course Objectives: To learn

1. Differentiation and integration of complex Valued functions
2. Evaluation of integrals using Cauchy's integral formula
3. Laurent's series expansion of complex functions
4. Evaluation of integrals using Residue theorem
5. A periodic function by Fourier series and a non-periodic function by Fourier transform
6. z-transform of a sequence and properties

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

1. Analyze the complex functions with reference to their analyticity, integration using Cauchy's integral theorem
2. Find the Taylor's and Laurent's series expansion of complex functions the bilinear transformation
3. Express any periodic function in term of sines and cosines
4. Express a non-periodic function as integral representation
5. Understanding the characteristics and properties of z-transforms, compute inverse z-transform and solve difference equations using z-transforms

UNIT – I

Analytic Functions: Introduction, Continuity, Differentiability, Analyticity,Cauchy-Riemann equations in Cartesian and polar coordinates(without proof)**.** Harmonic and conjugate harmonic functions-Milne-Thompson method(without proof).

UNIT – II

Complex integration: Line integral, Cauchy's integral theorem, Cauchy's integral formula,and Generalized Cauchy's integral formula, Power series: Taylor's series-Laurent series.

UNIT – III

Singularities and Contour Integration: Singular points, isolated singular points essential singularity,Pole, Residue, Cauchy Residue theorem (Without proof) Residue – Evaluation of residue by formula and by Laurent series – Residue theorem. Evaluation of integrals of the type(a) Improper real integrals

$\int_{-x}^{x} f(x)dx$ (b) $\int_{c}^{c+2\pi} f(cos\theta, sin\theta)d\theta.$

UNIT – IV

Fourier series: Introduction, Fourier series definition, Dirichlet's conditions, Even and odd functions, Half range sine and cosine series.

UNIT – V

Transform Techniques:

Fourier Transforms: Fourier integral theorem (without proof), Fourier sine and cosine integrals, sine and cosine transforms, properties, inverse transforms and finite Fourier transforms.

z-transforms: z- transforms, inverse z-transforms, properties, damping rule, shifting rule, Initial and final value theorems, convolution theorem, solution of difference equation by z-transforms.

TEXT BOOKS:

1. Dr. B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.
2. R. K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics, Narosa Publishers, 4th Edition, 2014.
3. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons,9thEdition, 2006.

REFERENCES:

1. Murray Spigel, Seymour Lischutz, John Schiller, Dennis Spellman, Complex Variables bu Schaum's Outlines, 2nd Edition, 2009.
2. S. Arumugam, A. Tangapandi Isaac, A. Somasundaram, Complex Analysis, Scitech Publications, 2012.

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(2204PC01) ELECTRONIC DEVICES AND CIRCUITS

OBJECTIVES:

The main objectives of the course are:

1. To familiarize the student with the principal of operation, analysis and design of junction diode, BJT and FET transistors and amplifier circuits.
2. To understand diode as a rectifier.
3. To study basic principal of filter of circuits and various types

OUTCOMES:

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

1. Understand and Analyse the different types of diodes, operation and its characteristics
2. Design and analyse the DC bias circuitry of BJT and FET
3. Design biasing circuits using diodes and transistors.
4. To analyze and design diode application circuits, amplifier circuits and oscillators employing BJT, FET devices.

UNIT-I

P-N Junction diode: Qualitative Theory of P-N Junction, P-N Junction as a diode , diode equation, volt-ampere characteristics temperature dependence of V-I characteristic , ideal versus practical, Resistance levels(static and dynamic), transition and diffusion capacitances, diode equivalent circuits, load line analysis, breakdown mechanisms in semiconductor diodes.

Special purpose electronic devices: Principal of operation and Characteristics of TunnelDiode with the help of energy band diagrams, Varactar Diode, SCR and photo diode.

UNIT-II

Rectifiers, Filters: P-N Junction as a rectifier ,Half wave rectifier, Full wave rectifier, Bridge rectifier , Harmonic components in a rectifier circuit, Inductor filter, Capacitor filter, L- section filter, π- section filter and comparison of various filters, Voltage regulation using Zener diode.

UNIT-III

Bipolar Junction Transistor: The Junction transistor, Transistor construction, Transistor current components, Transistor as an amplifier, Input and Output characteristics of transistor in Common Base, Common Emitter, and Common collector configurations. α and β Parameters and the relation between them, BJT Specifications.

BJT Hybrid Model: h-parameter representation of a transistor, Analysis of single stagetransistor amplifier using h-parameters: voltage gain, current gain, Input impedance and Output impedance. Comparison of transistor configurations in terms of A_i, R_i ,A_v,and R_o.

UNIT-IV

Transistor Biasing And Stabilisation: Operating point , the D.C and A.C Load lines,Need for biasing , criteria for fixing operating point, B.J.T biasing, Fixed bias, Collector to base bias, Emitter Feedback bias, Self bias techniques for stabilization, Stabilization factors(s, sI, sII), Bias Compensation using diode and transistor(Compensation against variation in VBE, ICO) Thermal run away, Condition for Thermal stability.

UNIT-V

Field Effect Transistor: JFET (Construction, principal of Operation and Volt –Ampere characteristics)-Pinch- off voltage, Small signal model of JFET. FET as Voltage Variable Resistor, Comparison of BJT and FET. MOSFET (Construction, Principle of Operation and symbol), MOSFET characteristics in Enhancement and Depletion modes.

TEXT BOOKS:

1. Millman's Electronic Devices and Circuits – J. Millman, C.C.Halkias, and Satyabrata Jit, 2 Ed.,1998, TMH.
2. Electronic Devices and Circuits – Mohammad Rashid, Cengage Learing, 2013
3. Electronic Devices and Circuits – David A. Bell, 5 Ed, Oxford

REFERENCE BOOKS:

1. Electronic Devices and Circuits,K.Lal Kishore B.S Publications
2. Electronic Devices and Circuits, S.Salivahanan,N.Sureshkumar, McGraw Hill.
3. Electronic Devices and Circuits,Balbirkumar ,shailb.jain, PHI PrivatedLimted,
4. Electronic Devices and Circuits,A.PGodse, U.A Bakshi , Technical Publications
5. Electronic Devices and Circuits K.S. Srinivasan Anurdha Agencies

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II Year B.Tech ECE-I Sem **L / T / P /C**
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(2204PC02) SIGNALS & SYSTEMS

OBJECTIVES:

The main objectives of the course are:

1. Coverage of continuous and discrete-time signals and representations and methods that is necessary for the analysis of continuous and discrete-time signals.
2. Knowledge of time-domain representation and analysis concepts as they relate to difference equations, impulse response and convolution, etc.
3. Knowledge of frequency-domain representation and analysis concepts using Fourier analysis tools, Z-transform.
4. Concepts of the sampling process.
5. Mathematical and computational skills needed in application areas like communication, signal processing and control, which will be taught in other courses.

OUTCOMES:

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

1. Represent any arbitrary signals in terms of complete sets of orthogonal functions and understands
2. Arbitrary signal (discrete) as Fourier transform to draw the spectrum.
3. Concepts of auto correlation and cross correlation and power Density Spectrum.
4. For a given system, response can be obtained using Laplace transform, properties and ROC of L.T.
5. Study the continuous and discrete signal relation and relation between F.T., L.T. & Z.T, properties, ROC of Z Transform

UNIT I:

Introduction to Signals: Elementary Signals- Continuous Time (CT) signals, DiscreteTime (DT) signals, Basic Operations on signals, Classification of Signals.

Signal Analysis: Analogy between vectors and signals, orthogonal signal space, Signalapproximation using orthogonal functions, Mean square error, Closed or complete set of orthogonal functions, Orthogonality in complex functions.

Fourier Series: Representation of Fourier series, Continuous time periodic signals,Dirichlet's conditions, Trigonometric Fourier Series, Exponential Fourier Series, Properties of Fourier series, Complex Fourier spectrum.

UNIT II:

Fourier Transforms: Deriving Fourier transform from Fourier series, Fourier transformof arbitrary signal, Fourier transform of standard signals, Fourier transform of periodic signals, Properties of Fourier transforms.

Sampling: Sampling theorem – Graphical and analytical proof for Band Limited Signals,impulse sampling, Natural and Flat top Sampling, Reconstruction of signal from its samples, effect of under sampling – Aliasing.

UNIT III:

Signal Transmission through Linear Systems: Introduction to Systems,Classification of Systems, Linear Time Invariant (LTI) systems, system, impulse response, 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.

Convolution of Signals: Concept of convolution in time domain,Graphical representation of convolution.

UNIT-IV:

Laplace Transforms: Review of Laplace transforms, Inverse Laplace transform, Conceptof region of convergence (ROC) for Laplace transforms, Properties of L.T's relation between L.T's, and F.T. of a signal. Laplace transform of certain signals using waveform synthesis.

UNIT-V:

Z–Transforms: Concept of Z- Transform of a discrete sequence. Distinction betweenLaplace, Fourier and Z transforms, Region of convergence in Z-Transform, Inverse Z-Transform, Properties of Z-transforms.

TEXT BOOKS:

1. Signals & Systems - Simon Haykin and Van Veen,Wiley, 2nd Edition.
2. Signals and Systems - A.V. Oppenheim, A.S. Willsky and S.H. Nawab, PHI, 2nd Edn.

REFERENCE BOOKS:

1. Signals and Systems – A. Anand Kumar, PHI Publications, 3rd edition.
2. Signals, Systems & Communications - B.P. Lathi, BS Publications, 2003.
3. Fundamentals of Signals and Systems Michel J. Robert, MGH International Edition, 2008.

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(2204PC03) NETWORK ANALYSIS

Pre-requisite: Basic Electrical & Electronics Engineering

OBJECTIVES:

The main objectives of the course are:

1. To understand the basic concepts on RLC circuits.
2. To know the behavior of the steady states and transients states in RLC circuits.
3. To know the basic Laplace transforms techniques in periodic waveforms.
4. To understand the two port network parameters.
5. To understand the properties of LC networks and filters.

OUTCOMES:

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

1. Gains the knowledge on Basic network elements.
2. Learns and analyze the RLC circuits' behavior in detail.
3. Analyze the performance of periodic waveforms.
4. Learns and gain the knowledge in characteristics of two port network parameters (Z,Y, ABCD, h & g).
5. To analyze the filter design concepts in real world applications.

UNIT - I

Review of R, L,C, RC, RL, RLC circuits, Network Topology, Terminology, Basic cutest and tie set matrices for planar networks, Illustrative Problems, Magnetic Circuits, Self and Mutual inductances, dot convention, impedance, reactance concept, Impedance transformation and coupled circuits, co-efficient of coupling, equivalent T for Magnetically coupled circuits, Ideal Transformer.

UNIT - II

Steady state and transient analysis of RC, RL and RLC Circuits, Circuits with switches, step response, 2nd order series and parallel RLC Circuits, Root locus, damping factor, over damped, under damped, critically damped cases, quality factor and bandwidth for series and parallel resonance, resonance curves.

UNIT - III

Network Analysis using Laplace transform techniques, step, impulse and exponentialvexcitation, response due to periodic excitation, RMS and average value of periodic waveforms.

UNIT - IV

Two port network parameters, Z, Y, ABCD, h and g parameters, Characteristic impedance, Image transfer constant, image and iterative impedance, network function, driving point and transfer functions – using transformed (S) variables, Poles and Zeros.

UNIT - V

Standard T, π , L Sections, Characteristic impedance, image transfer constants, Design of Attenuators, impedance matching network, T and π Conversion, LC Networks and Filters: Properties of LC Networks, Foster's Reactance theorem, design of constant K, LP, HP and BP Filters, Composite filter design.

TEXT BOOKS

1. Network Analysis – ME Van Valkenburg, Prentice Hall of India, 3rd Edition, 2000.
2. Networks, Lines and Fields - JD Ryder, PHI, 2nd Edition, 1999.

REFERENCES

1. Engineering Circuit Analysis – William Hayt and Jack E Kemmerly, MGH, 5th Edition, 1993.
2. Electric Circuits – J. Edminister and M.Nahvi – Schaum's Outlines, MCGRAW HILL EDUCATION, 1999.
3. Network Theory – Sudarshan and Shyam Mohan, Mc Graw Hill Education.

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II Year B.Tech ECE-I Sem **L / T / P /C**
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(2205ES03) COMPUTER ORGANIZATION AND OPERATING SYSTEMS

OBJECTIVES
The main objectives of the course are:

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

OUTCOMES
Upon completion of the Course, the students will be able to:

1. Basic structure of a digital computer
2. Arithmetic operations of binary number system
3. The organization of the Control Unit, Arithmetic and Logical Unit, Memory Unit and the I/O unit.
4. Operating system functions, types, system calls.
5. Memory management techniques and dead lock avoidance
6. Operating system files system and 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-Only Memories, Cache Memories Performance Considerations, Virtual 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, Operating Systems Structures- Systems Calls, System Programs **Process Management:** Process,ProcessStates,Process Control Block,CPU Scheduling Algorithams **Memory Management:** Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation, Virtual Memmory, Demand Paging, Page-Replcement Algorithms, Allocation of Frames, Thrashing

UNIT - V:

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

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

TEXT BOOKS:

1. Computer Organization - Carl Hamacher, ZvonksVranesic, SafeaZaky, 5th Edition, McGraw Hill.
2. Computer System Architecture - M.Moris Mano, 3rd edition, Pearson

REFERENCE BOOKS:

1. Computer Organization and Architecture - William Stallings 6th Edition, Pearson
2. Operating System Concepts - AbrehamSilberchatz, Peter B. Galvin, Greg Gagne, 8th Edition, John Wiley.
3. Structured Computer Organization - Andrew S. Tanenbaum, 4th Edition, PHI
4. Operating Systems - Internals and Design Principles, Stallings, 6th Edition - 2009, Pearson Education.
5. Modern Operating Systems, Andrew S Tanenbaum 2nd Edition, PHI
6. Principles of Operating System, B. L. Stuart, Cengage Learning, India Edition.

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(2204PC61) ELECTRONIC DEVICES AND CIRCUITS LAB

PART A: (Only for Viva-voce Examination)
Electronic Workshop Practice (In 3 Lab Sessions):

1. Identification, Specifications, Testing of R, L, C Components (Color Codes), Potentiometers, Switches (SPDT, DPDT, and DIP), Coils, Gang Condensers, Relays,
   Bread Boards, PCB's
2. Identification, Specifications and Testing of Active Devices, Diodes, BJT's, Low power JFET's, MOSFET's, Power Transistors, LED's, LCD's, SCR, UJT.
3. Study and operation of
   i. Multimeters (Analog and Digital)
   ii. Function Generator
   iii. Regulated Power Supplies
   iv. CRO.

1. P-N junction diode characteristics
2. Zener diode characteristics and Zener as voltage regulator
3. Half -Wave Rectifier with and without filter
4. Full - Wave Rectifier with and without filter
5. Input and output characteristics of transistor in CB configuration
6. Input and output characteristics of transistor in CE configuration
7. FET Characteristics
8. h-parameters of CE configuration
9. Frequency response of CE amplifier
10. Frequency response of CC amplifier
11. Frequency response of common source FET amplifier
12. UJT CHARACTERISITCS

1. Regulated Power supplies (RPS)	0-30 V
2. CRO's	0-20 MHz
3. Function Generators	0-1 MHz
4. Multimeters	
5. Decade Resistance Boxes / Rheostats	
6. Decade Capacitance Boxes	
7. Ammeters (Analog or Digital)	0-20 μA, 0-50μA, 0-100μA, 0-200μA, 0-10 mA
8. Voltmeters (Analog or Digital)	0-50V, 0-100V, 0-250V
9. Electronic Components	Resistors, Capacitors, BJT's, SCR's, UJTs, FET's,LED's, MOSFET's, Diodes- Ge & Si type, Transistors – NPN, PNP

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(2204PC62) BASIC SIMULATION LAB

Note:

1. All the experiments are to be simulated using MATLAB or equivalent software
2. Minimum of 15 experiments are to be completed

List of experiments:

1. Basic operations on matrices.
2. Generation on various signals and Sequences (periodic and aperiodic), such as unit impulse, unit step, square, sawtooth, triangular, sinusoidal, ramp, sinc.
3. Operations on signals and sequences such as addition, multiplication, scaling, shifting, folding.
4. Finding the even and odd parts of signal/sequence and real and imaginary part of signal.
5. Convolution between signals and sequences.
6. Auto correlation and cross correlation between signals and sequences.
7. Verification of linearity properties of a given continuous /discrete system.
8. Verification of time invariance properties of a given continuous discrete system.
9. Computation of unit sample, unit step and sinusoidal response of the given LTI system and verifying its stability.
10. Waveform synthesis using Laplace transform.
11. Finding the Fourier transform of a given signal and plotting its magnitude and phase spectrum.
12. Locating the zeros and poles and plotting the pole zero maps in s-plane and z-plane for the given transfer function.
13. Generation of Gaussian Noise (real and complex), computation of its mean, M.S. Value and its skew, kurtosis, and PSD, probability distribution function.
14. Sampling theorem verification.
15. Removal of noise by auto correlation/cross correlation.
16. Verification of Weiner-Khinchine relations.
17. Checking a random process for stationary in wide sense.

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II Year B.Tech ECE-I Sem **L /T / P/ C**
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(2200MC04) INDIAN CONSTITUTION
(Mandatory Course)

Course Objective:
To enable the students to be aware of emergence and evolution of Indian Constitution,to understand their fundamental rights and duties and to understand the structure and composition of Election Commission.

Course Outcome:
Students will be able to understand and discuss about Indian constitution. The students will learn their Rights and Responsibilities as an Indian citizen.

UNIT –I Meaning and Importance of Constitution, Evolution of the constitution of India. Salient features of the constitution of India

UNIT –II Scheme of fundamental rights, fundamental duties and its legal status. The Directive Principles of State Policy- Significance and implementation

UNIT –III Government of the Union : President of India – Election and Powers, Prime Minister and Council of Ministers, Lok Sabha – Composition and Powers, Rajya Sabha – Composition and Powers

UNIT –IV The historical perspectives of the constitutional amendments in India. Emergency provisions: National Emergency, President Rule, Financial Emergency, Local self-government-Constitutional scheme in India

UNIT –V Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ST/OBC and women.

TEXTBOOKS:
1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.

REFERENCES:
1. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015
2. ‘Indian Administration’ by Avasti and Avasti

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II Year B.Tech ECE-II Sem **L/ T / P / C**
3 / 0 / 0 / 3

(2204PC04) ANALOG CIRCUITS

OBJECTIVES

The main objectives of the course are:

1. To introduce circuit realizations with components such as diodes, BJTs and transistors studied earlier.
2. To give understanding of various types of amplifier circuits such as small signal, cascaded, large signal and tuned amplifiers.
3. To familiarize the Concept of feedback in amplifiers so as to differentiate between negative and positive feedback.

OUTCOMES

Upon completion of the Course, the students will be able to:

1. Design and analyze small signal amplifier circuits applying the biasing techniques learnt earlier.
2. Cascade different amplifier configurations to obtain the required overall specifications like Gain, Bandwidth, Input and Output interfacing Impedances.
3. Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications.
4. Utilize the Concepts of negative feedback to improve the stability of amplifiers and positive feedback to generate sustained oscillations.

UNIT – I

And Design of Small Signal Low Frequency BJT Amplifiers:

CE Amplifier with emitter resistance, low frequency response of BJT Amplifiers, effect of coupling and bypass capacitors, Design of single stage RC coupled amplifier Different coupling schemes used in amplifiers, Analysis of Cascaded RC Coupled amplifiers, Cascode amplifier, Darlington pair,

UNIT – II

Transistor At High Frequency: The Hybrid- pi – Common Emitter transistor model,CE short circuit current gain, current gain with resistive load, single stage CE transistor amplifier response, Gain-bandwidth product.

UNIT – III

FET Amplifiers: Analysis of JFET Amplifiers, Analysis of CS, CD, CG JFET Amplifiers, comparison of performance with BJT Amplifiers, Basic Concepts of MOS Amplifiers, – MOSFET – MOSFET Characteristics in Enhancement and Depletion mode – MOS Small signal model, Common source amplifier with resistive, Source follower, Common Gate Stage

UNIT –IV

Positive & Negative Feedback In Amplifiers: Classification of amplifiers, Concepts of feedback – Classification of feedback amplifiers – General characteristics of negative feedback amplifiers – Effect of Feedback on Amplifier characteristics – Voltage series, Voltage shunt, Current series and Current shunt Feedback configurations – Simple problems. **Oscillators:** Classification of oscillators, Barkhausen criterion, RC phase shift oscillator, Wein bridge oscillator, LC oscillator Hartley and Colpitts oscillator.

UNIT – IV

Large Signal Amplifiers: classification,distortion and amplifiersClass A Power Amplifier, Maximum Value of Efficiency of Class – A Amplifier, Transformer Coupled Amplifier, Push Pull and Complimentary Symmetry Class B and Class AB Power Amplifiers – Transistor Power Dissipation, Heat Sinks.

TEXT BOOKS:

1. Electronic Devices and Circuits, David A. Bell – 5th Edition, Oxford.
2. Electronics circuits and applications , Md H Rashid, Cengage 2014

REFERENCES:

1. Integrated Electronics, Jacob Millman, Christos C Halkias, McGraw Hill Education
2. 2. Electronic Devices and Circuits, S. Salivahanan, N. Suresh Kumar, A Vallvaraj, 5th Edition, MC GRAW HILL EDUCATION.
3. 3. Electronic Devices and Circuits theory– Robert L. Boylestead, Louis Nashelsky, 11th Edition, 2009, Pearson.
4. Electronic Devices Conventional and current version -Thomas L. Floyd 2015.

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(2204PC05) ANALOG AND DIGITAL COMMUNICATIONS

OBJECTIVES

The main objectives of the course are:

1. To develop ability to analyze system requirements of analog communication systems.
2. To understand the need for modulation
3. To understand the generation, detection of various analog modulation techniques and also perform the mathematical analysis associated with these techniques.
4. To understand the pulse modulation techniques.
5. To understand the functional block diagram of Digital communication system.
6. To understand the need for source and channel coding.
7. To study various source and channel coding techniques.

OUTCOMES

Upon completion of the course, student should possess the following skills:

1. Able to analyze and design various modulation and demodulation analog systems.
2. Understand the characteristics of noise present in analog systems.
3. Study of signal to Noise Ration (SNR) performance, of various Analog Communication systems.
4. Understand basic components of Digital Communication Systems.
5. Analyze the error performance of Digital Modulation Techniques.
6. Understand the redundancy present in Digital Communication by using various sourcecoding techniques.
7. Know about different error detecting and error correction codes like block codes,cyclic codes and convolution codes

Unit-I: Analog Modulation Schemes: Introduction to communication system, Principles of Amplitude Modulation Systems- DSB, SSB and VSB modulations. Angle Modulation, Representation of FM and PM signals, Spectral characteristics of angle modulated signals.

Unit-II: Noise in Analog Communication:Noise in AM, FOM measurement in AM, DSBSC,SSBSC. Noise in FM, FOM measurement in FM, Pre-emphasis and De-emphasis.
Receivers: TRF Receiver, Super Heterodyne Receiver, Receiver characteristics, TDM, FDM

Unit-III:Pulse Analog modulation Techniques:PAM, PWM, PPM

Introduction to Digital Communication System: Digital Representation of analog signal, Advantages and Disadvantages of Digital Communication,
Waveform Coding Techniques: Pulse code modulation (PCM), Differential pulse code modulation. Delta modulation, Limitations, Adaptive Delta Modulation, S/N Ratio of PCM, DM.

Unit-IV: Information Theory: Information measurement, Entropy, Conditional Entropy, Mutual Information, properties, Information Rate, Discrete Memory less source, channel coding theorem. Source coding techniques-Shannon Fano, Huffman, Shannon Hartley laws. Error control coding: Block codes, Syndrome decoding, cyclic codes, syndrome decoding.

Unit-V: Pass band Digital Modulation schemes-ASK, PSK, FSK Generation-coherent and non coherent detection techniques, QPSK, 8PSK,16PSK, QAM-constellation diagrams.

TEXT BOOKS:

1. Communications system, S.Haykin, Wiley, 4 edition 2009.
2. Digital and Analog Communication Systems Sam Shanmugam, John Wiley, 2005.

REFERENCES:

1. Principles of Communication Systems -Herbert Taub, Donald L Schiling, Goutam Saha,3rd Edition, Mc Graw -Hill, 2008
2. Electronic communication systems, Wayne Tomasi, 5 edition, Pearson
3. Communication Systems: Analog and Digital,R. P. Singh,S. Sapre, McGraw-Hill Education, 2012
4. Digital Communications –John G. Proakis , MasoudSalehi –5th Edition, McGraw-Hill, 2008.

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(2204PC06) CONTROL SYSTEMS

OBJECTIVES

The main objectives of the course are:

1. To understand the different ways of system representations such as Transfer function
2. representation and state space representations and to assess the system dynamicresponse
3. To assess the system performance using time domain analysis and methods forimproving it
4. To assess the system performance using frequency domain analysis and techniquesfor improving the performance
5. To design various controllers and compensators to improve system performance

OUTCOMES

Upon completion of the course, student should possess the following skills:

1. Improve the system performance by selecting a suitable controller and/or a compensator for a specific application
2. Apply various time domain and frequency domain techniques to assess the system performance
3. Apply various control strategies to different applications (example: Power systems, electrical drives etc…)
4. Test system Controllability and Observability using state space representation and applications of state space representation to various systems.

UNIT – I

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

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

UNIT-II

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

UNIT – III

Stability Analysis: The concept of stability - Routh stability criterion – qualitative stability and conditional stability.

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

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

UNIT – IV Stability Analysis In Frequency Domain: Polar Plots, Nyquist Plots and applications of Nyquist criterion to find the stability - Effects of adding poles and zeros to G(s)H(s) on the shape of the Nyquist diagrams.

Classical Control Design Techniques: Compensation techniques – Lag, Lead, and Lead-Lag Controllers design in frequency Domain, PID Controllers.

UNIT – V

State Space Analysis of Continuous Systems: Concepts of state, state variables and state model, derivation of state models from block diagrams, Diagonalization- Solving the Time invariant state Equations- State Transition Matrix and its Properties.

TEXT BOOKS:

1. "I. J. Nagrath and M. Gopal", "Control Systems Engineering", New Age International (P) Limited, Publishers, 5th edition, 2009
2. "B. C. Kuo", "Automatic Control Systems", John wiley and sons, 8th edition, 2003.

REFERENCE BOOKS:

1. "N. K. Sinha", "Control Systems", New Age International (P) Limited Publishers, 3rd Edition, 1998.
2. "NISE", "Control Systems Engineering", John wiley, 6th Edition, 2011.
   "Katsuhiko Ogata", "Modern Control Engineering", Prentice Hall of India Pvt. Ltd.,3rd edition, 1998.

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(2204PC07) PROBABILITY THEORY AND STOCHASTIC PROCESS

OBJECTIVES:

The main objectives of the course are:

1. To provide mathematical background and sufficient experience so that student can read, write and understand sentences in the language of probability theory.
2. To introduce students to the basic methodology of "probabilistic thinking" and apply it to problems.
3. To understand basic concepts of Probability theory and Random Variables, how to deal with multiple Random Variables.
4. To understand the difference between time averages statistical averages.
5. To teach students how to apply sums and integrals to compute probabilities, and expectations.

OUTCOMES:

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

1. Understand probabilities and able to solve using an appropriate sample space.
2. Compute various operations like expectations from probability density functions (pdfs) and probability distribution functions
3. Understand Auto-correlation and cross correlation properties between two random variables.
4. Understand the concept of random process, differentiate between stochastic and ergodic processes.
5. Understand the concept of power spectral density and power density spectrum of a random process.
6. Apply the principles of a random process in system concepts.

UNIT I:

Probability and Random Variable

Probability: Set theory, Experiments and Sample Spaces, Discrete and Continuous SampleSpaces, Events, Probability Definitions and Axioms, Mathematical Model of Experiments, Joint Probability, Conditional Probability, Total Probability, Bayes' Theorem, and Independent Events.

The Random Variable: Definition of a Random Variable, Conditions for a Function to be aRandom Variable, Discrete and Continuous, Mixed Random Variable

UNIT II:

Distribution and Density Functions-Operations on One Random Variable

Distribution and density functions: Distribution and Density functions, Properties, Binomial,Poisson, Uniform, Exponential Gaussian, Rayleigh and Conditional Distribution, Methods of defining Conditioning Event, Conditional Density function and its properties, problems.

Operation on One Random Variable: Expected value of a random variable, function of arandom variable, moments about the origin, central moments, variance and skew, characteristic function, moment generating function.

UNIT III:

Multiple Random Variables and Operations on Multiple Random Variables

Multiple Random Variables: Vector Random Variables, Joint Distribution Function andProperties, Joint density Function and Properties, Marginal Distribution and density Functions, conditional Distribution and density Functions, Statistical Independence, Distribution and density functions of Sum of Two Random Variables and Sum of Several Random Variables, Central Limit Theorem - Unequal Distribution, Equal Distributions.

Operations on Multiple Random Variables: Expected Value of a Function of RandomVariables, Joint Moments about the Origin, Joint Central Moments, Joint Characteristic Functions, and Jointly Gaussian Random Variables: Two Random Variables case and N Random Variable case, Properties.

UNIT VI:

Stochastic Processes-Temporal Characteristics

The Stochastic process Concept,Classification of Processes, Deterministic and Nondeterministic Processes, Distribution and Density Functions, Statistical Independence and concept of Stationarity: First-Order Stationary Processes, Second-Order and Wide-Sense Stationarity, Nth-Order and Strict-Sense Stationarity, Time Averages and Ergodicity, Mean-Ergodic Processes, Correlation-Ergodic Processes Autocorrelation Function and Its Properties, Cross-Correlation- -Function and Its Properties, Covariance Functions and its properties, Gaussian Random Processes.

Linear system Response: Mean and Mean-squared value, Autocorrelation, Cross-CorrelationFunctions.

UNIT V:

Stochastic Processes-Spectral Characteristics

The Power Spectrum and its Properties,Relationship between Power Spectrum and Autocorrelation Function, the Cross-Power Density Spectrum and Properties, Relationship between Cross-Power Spectrum and Cross-Correlation Function.

Spectral characteristics of system response: power density spectrum of response, crosspower spectral density of input and output of a linear system

TEXT BOOKS:

1. Probability, Random Variables & Random Signal Principles -Peyton Z. Peebles, TMH, 4th Edition, 2001.
2. Probability and Random Processes-Scott Miller, Donald Childers,2Ed,Elsevier,2012

REFERENCE BOOKS:

1. Theory of probability and Stochastic Processes-Pradeep Kumar Gosh, University Press
2. Probability and Random Processes with Application to Signal Processing - Henry Stark and John W. Woods, Pearson Education, 3rd Edition.
3. Probability Methods of Signal and System Analysis- George R. Cooper, Clave D. MC Gillem, Oxford, 3rd Edition, 1999.
4. Statistical Theory of Communication -S.P. Eugene Xavier, New Age Publications 2003
5. Probability, Random Variables and Stochastic Processes Athanasios Papoulis and S.Unnikrishna Pillai, PHI, 4th Edition, 2002.

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(2000HS03) MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS

OBJECTIVES:

To enable the student to understand and appreciate, with a particular insight, the importance of certain basic issues governing the business operations namely, demand and supply, production function, cost analysis, markets, forms of business organizations, capital budgeting and financial accounting and financial analysis.

OUTCOMES:

At the end of the course, the student will

- Understand the market dynamics namely, demand and supply, demand forecasting, elasticity of demand and supply, pricing methods and pricing in different market structures.
- Gain an insight into how production function is carried out to achieve least cost combination of inputs and cost analysis.
- Develop an understanding to analyze how capital budgeting decisions are carried out.
- Understanding the framework for both manual and computerized accounting process.
- Know how to analyze and interpret the financial statements through ratio analysis.

Unit I: Introduction & Demand Analysis: Definition, Nature and Scope of Managerial Economics. Demand Analysis: Demand Determinants, Law of Demand and its exceptions. Elasticity of Demand: Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting.

Unit II: Production & Cost Analysis: Production Function - MRTS, Least Cost Combination of Inputs, Laws of Returns to Scale, Internal and External Economies of Scale. Cost Analysis: Cost concepts. Break-even Analysis (BEA) - Determination of Break-Even Point (simple problems).

Unit III: Markets & New Economic Environment: Types of competition and Markets, Features of Perfect competition, Monopoly and Monopolistic Competition, Pricing: Objectives and Policies of Pricing, Methods of Pricing, Business: Features and evaluation of different forms of Business Organization, Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types, New Economic Environment, Changing Business Environment in Post-liberalization scenario.

Unit IV: Capital Budgeting: Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising capital, Capital Budget, Cash Budget, Capital Budgeting: features of capital budgeting proposals, Methods of Capital Budgeting, Payback Method, Accounting Rate of Return (ARR) and Net Present Value Method (simple problems).

Unit V: Introduction to Financial Accounting & Financial Analysis: Accounting concepts and Conventions - Double Entry - Book Keeping, Journal, Ledger, Trial Balance - Final Accounts (Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments), Financial Statement Analysis: cash flow & Funds flow statements (simple problems).

TEXT BOOKS:

1. Varshney & Maheswari: Managerial Economics, Sultan Chand, 2009.
2. S.A. Siddiqui & A.S. Siddiqui, Managerial Economics and Financial Analysis, New Age international Publishers, Hyderabad 2013.
3. M. Kasi Reddy & Saraswathi, Managerial Economics and Financial Analysis, PHI New Delhi, 2012.

REFERENCES:

1. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi, 2012.
2. H. Craig Peterson & W. Cris Lewis, Managerial Economics, Pearson, 2012.
3. Lipsey & Chrystel, Economics, Oxford University Press, 2012.
4. Domnick Salvatore: Managerial Economics In a Global Economy, Thomson, 2012.
5. Narayanaswamy: Financial Accounting - A Managerial Perspective, Pearson, 2012.
6. S.N. Maheswari & S.K. Maheswari, Financial Accounting, Vikas, 2012.
7. Truet and Truet: Managerial Economics: Analysis, Problems and Cases, Wiley, 2012.
8. Dwivedi: Managerial Economics, Vikas, 2012.
9. Shailaja & Usha: MEFA, University Press, 2012.
10. Aryasri: Managerial Economics and Financial Analysis, TMH, 2012.
11. Vijay Kumar & Appa Rao, Managerial Economics & Financial Analysis, Cengage 2011.
12. J.V. Prabhakar Rao & P.V. Rao, Managerial Economics & Financial Analysis, Maruthi Publishers, 2011.

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(2204PC63) ANALOG CIRCUITS LAB

Note:

- Minimum 12 experiments should be conducted:
- Experiments are to be simulated using Multisim or P-spice or Equivalent Simulation and then testing to be done in hardware.

LIST OF EXPERIMENTS:

1. Common Emitter Amplifier
2. Common Base Amplifier
3. Common Source amplifier
4. Two Stage RC Coupled Amplifier
5. Current Shunt Feedback Amplifier
6. Voltage Series Feedback Amplifier
7. Cascode Amplifier
8. Wien Bridge Oscillator using Transistors
9. RC Phase Shift Oscillator using Transistors
10. Class A Power Amplifier (Transformer less)
11. Class B Complementary Symmetry Amplifier
12. Hartley Oscillator
13. Colpitt's Oscillator
14. Single Tuned Voltage Amplifier

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(2204PC64) ANALOG & DIGITAL COMMUNICATIONS LAB

Part-1: ANALOG COMMUNICATIONS (Any 8 Experiments)

1. Amplitude modulation and demodulation.
2. DSB-SC Modulator & Detector
3. SSB-SC Modulator & Detector (Phase Shift Method)
4. Frequency modulation and demodulation.
5. Study of spectrum analyzer and analysis of AM and FM Signals
6. Pre-emphasis & de-emphasis.
7. Verification of Sampling Theorem
8. Pulse Amplitude Modulation & Demodulation
9. Pulse Width Modulation & Demodulation
10. Pulse Position Modulation & Demodulation

Part-2: DIGITAL COMMUNICATIONS (Any 6 Experiments)

1. PCM Generation and Detection
2. Differential Pulse Code Modulation
3. Delta Modulation
4. Adaptive Delta modulation
5. Frequency Shift Keying: Generation and Detection
6. Phase Shift Keying: Generation and Detection
7. Amplitude Shift Keying: Generation and Detection
8. OFDM: Generation and Detection

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(2200MC03) HUMAN VALUES AND PROFESSIONAL ETHICS

Course Objective: To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome: The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I: Introduction to Human Values: Need, basic Guidelines, Content and Process for Value Education, Self Exploration - 'Natural Acceptance' and Experiential Validation. Continuous Happiness and Prosperity - A look at basic Human Aspirations. Right understanding, Relationship and Physical Facilities. Understanding Happiness and Prosperity correctly

UNIT - II:Understanding Harmony in the Family and Society: Harmony in Human - Human Relationship: Understanding harmony in the Family the basic unit of human interaction. Understanding values in human - human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship. Understanding the harmony in the society (society being an extension of family). Visualizing a universal harmonious order in society - Undivided Society (AkhandSamaj), Universal Order (SarvabhaumVyawastha) - from family to world family!

UNIT – III:Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT – IV:Professional Practices in Engineering: Work Place Rights & Responsibilities, Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession. Central Responsibilities of Engineers – The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.

UNIT – V:Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Depletion, Pollution, Ethics in Manufacturing and Marketing, Media Ethics, War Ethics, Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:

1. R. R. Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.
2. Professional Ethics: R. Subramanian, Oxford University Press, 2015.

REFERENCE BOOKS:

1. Prof. K. V. Subba Raju, 2013, Success Secrets for Engineering Students, Smart Student Publications, 3rd Edition.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press 2015.
3. Ivan IIIich, 1974, Energy & Equity, The Trinity Press, Worcester, and HarperCollins, USA
4. Engineering Ethics, Concepts Cases: Charles E Harris Jr., Michael S Pritchard, Michael J Rabins, 4e , Cengage learning, 2015.
5. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008.