BACHELOR OF TECHNOLOGY

Electrical and Electronics Engineering

COURSE STRUCTURE & SYLLABUS

(Batches admitted from the Academic Year 2020 -2021)

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(Autonomous Institution-UGC, Govt. of India)

Accredited by NBA & NAAC with 'A' Grade, UGC, Govt. of India
NIRF Indian Ranking–2020, Accepted by MHRD, Govt. of India
Band Excellent- National Ranking by ARIIA, MHRD, Govt. of India
Affiliated to JNTUH, Approved by AICTE, ISO 9001:2015 Certified Institution, 2nd Rank CSR,
AAAA+ Rated by Digital Learning Magazine, AAA+ Rated by Careers 360 Magazine
Platinum Rated by AICTE-CII Survey, National Ranking-Top 100 Rank band by Outlook,
National Ranking-Top 100 Rank band by Times News Magazine,
141 Natinal Ranking by India Today Magazing
Maisammaguda, Dhullapally, Secunderabad, Kompally-500100

COURSE STRUCTURE

I YEAR I-SEMESTER

S. NO.	SUBJECT CODE	SUBJECT	L	T	P	Credits	Max. Marks	
							Internal	External
1	2000HS01	English	2	0	0	2	30	70
2	2000BS01	Mathematics – I	3	1	0	4	30	70
3	2000BS06	Engineering Chemistry	3	1	0	4	30	70
4	2002ES01	Basic Electrical Engineering	3	0	0	3	30	70
5	2003ES61	Engineering Workshop	1	0	3	2.5	30	70
6	2000HS61	English Language & Communication Skills Lab	0	0	2	1	30	70
7	2000BS62	Engineering Chemistry Lab	0	0	3	1.5	30	70
8	2002ES61	Basic Electrical Engineering Lab	0	0	2	1	30	70
9*	2000MC02	Foreign Language: French	2	-	-	-	100	-
		Induction Programme						
		TOTAL	**14**	**2**	**10**	**19**	**340**	**560**

I YEAR II-SEMESTER

S. No.	Subject Code	SUBJECT	L	T	P	Credits	Max. Marks	
							Internal	External
1	2000BS02	Applied Physics	3	1	0	4	30	70
2	2000BS05	Mathematics – II	3	1	0	4	30	70
3	2005ES01	Programming for Problem Solving	3	1	0	4	30	70
4	2003ES01	Engineering Drawing	1	0	4	3	30	70
5	2000BS61	Applied Physics Lab	0	0	3	1.5	30	70
6	2005ES61	Programming for Problem Solving Lab	-	0	3	1.5	30	70
7*	2000MC01	Environmental Science	3	0	0	0	100	0
		TOTAL	**13**	**3**	**10**	**18**	**280**	**420**

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

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

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	2000BS03	Mathematics – III	3	1	-	4	30	70
2	2003ES02	Engineering Mechanics	3	-	-	3	30	70
3	2002PC01	Electrical Circuit Analysis	3	-	-	3	30	70
4	2002PC02	Analog Electronics	3	-	-	3	30	70
5	2005ES02	PYTHON Programming	3	-	-	3	30	70
6	2002PC61	Analog Electronics Lab	-	-	3	1.5	30	70
7	2002PC62	Electrical Circuit Analysis Lab	-	-	3	1.5	30	70
8*	2000MC04	Indian Constitution	2	-	-	-	100	-
		Total	**20**	1	**6**	**19**	**310**	**490**

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

II Year B. Tech – II Semester (IVSemester)

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	2002PC03	Electro Magnetic Fields	3	-	-	3	30	70
2	2002PC04	Signals & Systems	3	-	-	3	30	70
3	2005ES03	Data Structures using PYTHON	3	-	-	3	30	70
4	2002PC05	Electrical Machines – I	3	-	-	3	30	70
5	2002PC06	Power Systems – I	3	-	-	3	30	70
6	2002PC07	Digital Electronics	3	-	-	3	30	70
7	2002PC63	Digital Electronics Lab	-	-	3	1.5	30	70
8	2002PC64	Electrical Machines Lab – I	-	-	3	1.5	30	70
9*	2000MC03	Human Values & Professional Ethics	2	-	-	-	100	-
		Total	**17**	-	**6**	**21**	**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	2000HS04	Managerial Economics & Financial Analysis	3	-	-	3	30	70
2	2000HS02	Professional English	3	-	-	3	30	70
3	2002PC08	Control Systems	3	-	-	3	30	70
4	2002PC09	Electrical Machines-II	3	-	-	3	30	70
5	*******	Open Elective – I	3	-	-	3	30	70
6	*******	Professional Elective –I	3	-	-	3	30	70
7	2002PC65	Control Systems & Simulation Lab	-	-	3	1.5	30	70
8	2002PC66	Electrical Machines Lab – II	-	-	3	1.5	30	70
9*	2000MC06	Indian Traditional Knowledge	2	-	-	-	100	-
		Total	**20**	**-**	**6**	**21**	**340**	**560**

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

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

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	2000HS03	Management Science	3	-	-	3	30	70
2	2002PC10	Power Electronics	3	-	-	3	30	70
3	2002PC11	Power Systems – II	3	-	-	3	30	70
4	*******	Open Elective – II	3	-	-	3	30	70
5	*******	Professional Elective –II	3	-	-	3	30	70
6	*******	Professional Elective –III	3	-	-	3	30	70
7	2002PC67	Power Electronics & Simulation Lab	-	-	3	1.5	30	70
8	2002PC68	Power Systems Lab	-	-	3	1.5	30	70
9*	2000MC05	Technical Communication & Soft skills	2	-	-	-	100	-
		Total	**20**	**-**	**6**	**21**	**340**	**560**

***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 -I Semester (VII Semester)

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	2002PC12	Electrical Measurements & Instrumentation	3	-	-	3	30	70
2	2002PC13	Microprocessors & Microcontrollers	3	1	-	4	30	70
3	*******	Open Elective – III	3	-	-	3	30	70
4	*******	Professional Elective – IV	3	-	-	3	30	70
5	2002PC69	Electrical Measurements & Instrumentation Lab	-	-	3	1.5	30	70
6	2002PC70	Microprocessors & Microcontrollers Lab	-	-	3	1.5	30	70
7	2002PR01	Industry Oriented Mini Project /Internship	-	-	-	2	30	70
8	2002PR02	Project –I	-	-	8	4	30	70
		Total	**12**	**1**	**14**	**22**	**240**	**560**

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

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

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks	
							INT	EXT
1	*******	Open Elective – IV	3	-	-	3	30	70
2	*******	Professional Elective – V	3	-	-	3	30	70
3	*******	Professional Elective – VI	3	-	-	3	30	70
4	2002PR03	Technical Seminar	-	-	-	2	100	-
5	2002PR04	Innovation- Start-Up & Entrepreneurship	-	-	4	2	50	100
6	2002PR05	Project-II	-	-	12	6	50	100
		Total	**9**	**-**	**16**	**19**	**290**	**410**

I YEAR		II YEAR		III YEAR		IV YEAR		TOTAL CREDITS
I	II	I	II	I	II	I	II	
19	18	19	21	21	21	22	19	160

Total Credits: 160

PROFESSIONAL ELECTIVES					
Professional Elective -I		**Professional Elective -II**		**Professional Elective -III**	
20**02PE01**	Wind & Solar Energy Systems	20**02PE04**	Power System Protection	20**02PE07**	Digital Signal Processing
20**02PE02**	High Voltage Engineering	20**02PE05**	Electrical & Hybrid Vehicles	20**02PE08**	Power System Operation & Control
20**02PE03**	Line Commutated Active Rectifiers	20**02PE06**	Electrical Estimation & Costing	20**02PE09**	High Energy Storage Systems
Professional Elective -IV		**Professional Elective -V**		**Professional Elective -VI**	
20**02PE10**	Power System Analysis	20**02PE13**	Power Quality & FACTS Devices	20**02PE16**	EHV AC Transmission Systems
20**02PE11**	Power Semiconductor Drives	20**02PE14**	Electrical Machine Design	20**02PE17**	Utilization of Electrical Energy
20**02PE12**	Digital Control Systems	20**02PE15**	Electrical Distribution Systems	20**02PE18**	Programmable Logic Controller & Applications

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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**	**2004OE01:** Principles of Electronic Communications **2004OE02:** Sensors & Actuators	**2004OE03:**Principles of Computer Communications & Networks **2004OE04:** Fuzzy Logic & Neural Networks	**2004OE05:**Microprocessor and Interfacing **2004OE06:** Internet of Things	**2004OE07:**Principles of Wireless Communications & Networks **2004OE08:** Robotics
2	Computer Science & Engineering	2005OE01: Fundamentals of Database Management Systems 2005OE02: Operating Systems Principles	2005OE03: Java Programming 2005OE04: Data& Knowledge Mining	2005OE05: Case Tools &Software Testing 2005OE06: Computer Forensics	2005OE07:Fundamentals of Data Analytics 2005OE08: Cryptography and Network Security
3	Information Technology	2012OE01: Image Processing 2012OE02: Software Engineering Principles	2012OE03:Web Design 2012OE04:Design Patterns	2012OE05:Introduction to Linux 2012OE06: Principles of Programming Languages	2012OE07:R-Programming 2012OE08:Scripting Languages
4	**Electrical & Electronics Engineering**	**2002OE01:**Fundamentals of Electrical Engineering **2002OE02:**Elements of Electrical Engineering	**2002OE03:**Principles of Power System Engineering **2002OE04:**Utilization of Solar Energy	**2002OE05:**Renewable Energy Systems **2002OE06:**Basics Control System Engineering	**2002OE07:**Energy storage Systems **2002OE08:**Illumination Engineering

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech. I Year I Sem. **L / T/ P/ C**
2/ 0 / 0/ 2

2000HS01: ENGLISH

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

1. Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills.
2. Enhance competencies in writing essays and gist of the passage in words.
3. Equip students to study academic subjects more effectively and critically, using the theoretical and practical components of English syllabus.
4. 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 University Press.

References:

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

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

2000BS01: MATHEMATICS - I

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.
- Concept of Sequence.
- Concept of nature of the series.
- Geometrical approach to the mean value theorems and their application to the mathematical problems Evaluation of surface areas and volumes of revolutions of curves.
- Evaluation of improper integrals using Beta and Gamma functions
- 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 analyse the solution of the system of equations
- Find the Eigen values and Eigen vectors
- Reduce the quadratic form to canonical form using orthogonal transformations.
- Analyse the nature of sequence and series.
- Solve the applications on the mean value theorems
- Evaluate the improper integrals using Beta and Gamma functions
- Find the extreme values of functions of two variables with/ without constraints.

UNIT-I: Matrices

Matrices: Types of Matrices, Symmetric; Hermitian; Skew-symmetric; 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

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

UNIT-III: Differential Calculus:

Rolle'smean value theorem (without proof), Lagrange's Mean value theorem(without proof)with their Geometrical Interpretation, Cauchy's Mean value Theorem (without proof). Taylor'sseries,Maclaurin'sseries. Definition of Improper Integral; Definition of Beta and Gamma functions, properties, relation between them and evaluation of integrals using Beta and Gamma functions.

UNIT-IV: Calculus 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 multipliers.

UNIT-V: Multiple Integrals:

Evaluation of Double Integrals (Cartesian and Polar coordinates); Change of order of integration (only Cartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals. Areas (by double integrals) and Volumes (by double integrals and triple integrals).

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. Michael Greenberg, Advanced Engineering Mathematics, Pearson Education, 2nd Edition, 1998.
2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 9thEdition,2006.
3. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi,11thReprint, 2017.

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

2000BS06: ENGINEERING CHEMISTRY

COURSE OBJECTIVES:

- 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 ofa 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 N2, O2 and F2 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 complex 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 voltammetric 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 alanalysis of n- butane.

Substitution reactions: Nucleophilic substitution reactions: Mechanism of SN1, SN2 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 LiAlH4 & NaBH4.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

B.Tech. I Year I Sem. **L / T/ P/C**

3/ 0 / 0/ 3

2002ES01: BASIC ELECTRICAL ENGINEERING

Course Objectives:

1. To introduce the concepts of electrical circuits and its components
2. To understand magnetic circuits, 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:

1. To analyze and solve electrical circuits using network laws and theorems.
2. To understand and analyze basic Electric and Magnetic circuits
3. To study the working principles of Electrical Machines
4. To 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

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 RL- C 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, starting and speed control of induction motor. 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 and battery backup.

Text-Books/Reference-Books:

1. Basic Electrical Engineering - D.P. Kothari and I.J. Nagrath, 3rd edition 2010, Tata McGraw Hill.
2. D.C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.
3. L.S. Bobrow, Fundamentals of Electrical Engineering", Oxford University Press, 2011
4. Electrical and Electronics Technology, E. Hughes, 10th Edition, Pearson, 2010
5. Electrical Engineering Fundamentals, Vincent Deltoro, Second Edition, Prentice Hall India, 1989.

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B.Tech. I Year I Sem. **L / T/ P/ C**
1/ 0 / 3/ 2.5

2003ES61: ENGINEERING WORKSHOP

Objectives:

1. To Study of different hand operated power tools, uses and theirdemonstration.
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 engineeringfield.
4. To develop a right attitude, team working, precision and safety at workplace.
5. To study commonly used carpentryjoints and to have practical exposure to various welding and joiningprocesses.

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

1. Study and practice on machine tools and theiroperations
2. Practice on manufacturing of components using workshop trades including pluming, fitting, carpentry, foundry, house wiring andwelding.
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 wiringpractice.
5. Study commonly used carpentryjoints.

I. Carpentry

1. Cross lapjoint
2. Mortise & tenonjoint

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 (WaterPlasma)

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

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2000HS61: ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB

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:

1. To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning
2. To sensitize students to the nuances of English speech sounds, word accent, intonation and rhythm
3. To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking
4. To improve the fluency of students in spoken English and neutralize their mother tongue influence
5. To train students to use language appropriately for public speaking and interviews
6. Better understanding of nuances of English language through audio- visual experience and group activities
7. Neutralization of accent for intelligibility
8. 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.

1. Listening for general content
2. Listening to fill up information
3. Intensive listening
4. 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

- **The following course content is prescribed for the English Language and Communication Skills Lab based on Unit-6 of AICTE Model Curriculum 2018 for B.Tech First English. As the syllabus is very limited, it is required to prepare teaching/learning materials by the teachers collectively in the form of handouts based on the needs of the students in their respective colleges for effective teaching/learning and timesaving in the Lab)**

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.

Exercise – 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: 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 Miss pelt – 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 studies on Group Discussions *and Mock* Interviews.

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, LCD and a projector etc.

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2000BS62: ENGINEERING CHEMISTRY LAB

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 Fe2+ by Potentiometry using KMnO4
7. Determination of rate constant of acid catalysed hydrolysis of methyl acetate
8. Synthesis of Aspirin and Paracetamol
9. Thin layer chromatography calculation of Rf 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.

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2002ES61: BASIC ELECTRICAL ENGINEERING LAB

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:

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

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2000MC02: FOREIGN LANGUAGE: FRENCH
(Mandatory Course)

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.

OBJECTIVES

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

OUTCOMES

1. The students will be able to communicate in French at A1 level.
2. 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

SYLLABUS

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 – The –ir verbs in the present - The verbs do, go, take, come, - Adverbs - Reflexive verbs

Vocabulary - The days and months of the year - The sports – Hobbies

UNIT - IV

Speaking: Express the quantity - ask and give the price - express the need, the will and the capacity - 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 (Coursebook) By Livid Language
5. Ã L'Aventure: An Introduction to French Language and Francophone Cultures by Evelyne Charvier-Berman, Anne C. Cummings.

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2000BS02: APPLIED PHYSICS

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
3. Electromagnetic theory and a broad base of knowledge in physics.
4. The graduates will be able to solve non-traditional problems that potentially draw on knowledge in multiple areas of physics.
5. 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 of electromagnetism and also to have exposure on magnetic materials and dielectric materials.

UNIT-I: Quantum Mechanics
Introduction to quantum physics, Black body radiation, Photoelectric effect, Compton effect experiment and Compton shift, de-Broglie's hypothesis, Wave-particle duality, Davisson and Germer experiment, Heisenberg's Uncertainty principle, Wave function and its physical significance, 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, LED and Device structure, Materials, Characteristics and figures of merit, Semiconductor photo detectors: Solar cell, PIN and Avalanche and their structure , Materials, working principle and Characteristics and applications.

UNIT-IV: Lasers and Fiber Optics:
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 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, 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

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2000BS05: MATHEMATICS – II

Course Objectives: To learn

1. Methods of solving the linear differential equations of first order, equations solvable for p, y and x.
2. Methods of solving the linear differential equations of higher order.
3. Properties of Laplace transforms, solving ordinary differentialequations using Laplace transforms techniques.
4. The physical quantities involved in engineering field related to vector valued functions.
5. The basic properties of vector valued functions and their applications to line, surface and volume integrals.

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

1. Identify whether the given differential equationof first order is exact or not and solve the first Order differential equations.
2. Solve higher differential equation and apply the concept of differential equation to real world problems.
3. Use the Laplace transforms techniques for solving ODE's.
4. Find the directional derivatives, Irrotational and Solenoidal function and angle between the surfaces.
5. Evaluate the line, surface and volume integrals and converting them from one to another.

UNIT-I:

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-II:

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-III:

Laplace Transforms:

Definition of Laplace transform, domain of the function and Kernel for the Laplace transforms, Existence of Laplace transform, Laplace transform of standard functions, first shifting Theorem, Laplace transform of functions when they are multiplied or divided by 't', Laplace transforms of derivatives and integrals of functions, Unit step function, Periodic function.

Inverse Laplace transform by Partial fractions, Inverse Laplace transforms of functions when they are multiplied or divided by 's', Inverse Laplace Transforms of derivatives and integrals of functions, Convolution theorem, Solving ordinary differential equations by Laplace transforms.

UNIT-IV:

Vector Differentiation: Vector point functions and Scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Tangent plane and Normal line. Scalar potential functions. Solenoidal function and Irrotational vector, Vector Identities.

UNIT-V:

Vector Integration: Line, Surface and Volume Integrals. Green's theorem, Stoke's theorem and Gauss's Divergence Theorem (Statement & their verification).

TEXT BOOKS:

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 Publishers, 4th Edition, 2014.

REFERENCES:

1. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 9th Edition, 2006.
2. Michael Greenberg, Advanced Engineering Mathematics, Pearson Education, 2nd Edition, 1998.
3. S. L. Ross, Differential Equations, Wiley India, 3rd Edition, 1984.

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2005ES01: **PROGRAMMING FOR PROBLEM SOLVING**

Course Objectives:

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

Course Outcomes: The student will learn

1. To write algorithms and to draw flowcharts for solving problems.
2. To convert the algorithms/flowcharts to C programs.
3. To code and test a given logic in C programming language.
4. To decompose a problem into functions and to develop modular reusable code.
5. To use arrays, pointers, strings and structures to write C programs.
6. 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.

Storage classes (auto, extern, static and register).

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. Forouzan and R. 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 wit
3. h C, B. Gottfried, 3rd edition, Schaum's outlines, McGraw Hill Education (India) Pvt Ltd.
4. C From Theory to Practice, G S. Tselikis and N D. Tselikas, CRC Press.
5. Basic computation and Programming with C, Subrata Saha and S. Mukherjee, Cambridge University Press

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2003ES01: ENGINEERING DRAWING

Course Objectives:

1. To enable the students with various concepts like Dimension, 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 in-volutes.
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.

Introduction to Auto CAD Software:
The Menu System, Toolbar (Standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Cross hairs, 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.

UNIT-I:
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, 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.

REFERENCES

1. Engineering Drawing / Basant Agarwal and McAgarwal / McGraw Hill
2. Computer Aided Engineering Drawing – S. Trymbaka Murthy, - I.K. International Publishing House Pvt. Ltd., New Delhi, 3rd revised edition-2006.

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2000BS61: APPLIED PHYSICS LAB

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 microstate.
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 soon.
3. Design, characterization and study of properties of material help the students toprepare 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 andmagnetic 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**
   Characteristics of a given Solar Cell
3. **Light Emitting Diode**
   To study the VI 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

B.Tech. I Year I Sem. **L / T / P/ C**

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2005ES61: PROGRAMMING FOR PROBLEM SOLVING LAB

Course Objectives: The students will learn the following:

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

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

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

Practice sessions:

a. 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.
b. 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. Write program that declares Class awarded for a given percentage of marks, where mark <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 formula s = ut+(1/2)at^2 where u and a are the initial velocity in m/sec (= 0) and acceleration in m/sec^2 (= 9.8 m/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. Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression: 1+x+x^2+x^3+…..... +x^n. For example: if n is 3 and x is 5, 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:
d. Addition of Two Matrices
e. ii. Multiplication of Two Matrices
f. iii. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be same.
g. Write C programs that use both recursive and non-recursive functions
h. To find the factorial of a given integer.
i. ii. To find the GCD (greatest common divisor) of two given integers.
j. iii. To find x^n
k. Write a program for reading elements using pointer into array and display the values using array.
l. Write a program for display values reverse order from array using pointer.
m. 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:

i. To insert a sub-string in to a given main string from a given position.

ii. 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
   f. Reading a complex number
   ii. Writing Complex Number
   iii. Addition of 2 Complex Numbers
   iv. 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 uppercase 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:

It should first create a binary file and store 10 integers, where the file name and 10 values are given in the command line. (hint: convert the strings using atoi function) Now the 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.

e. 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
iv. Hall of India
v. R.G. Dromey, How to solve it by Computer, Pearson (16th Impression)
vi. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
vii. Herbert Schildt, C: The Complete Reference, Mc Graw Hill, 4th Edition

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech. I Year II Sem. **L /T / P/ C**
2 / 0 / 0 / 0

2000MC01: ENVIRONMENTAL SCIENCE

Course Objectives:

1. Understanding the importance of ecological balance for sustainable development.
2. Understanding the impacts of developmental activities and mitigation measures.
3. Understanding the environmental policies and regulations

Course Outcomes:

1. Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development.

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, 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 ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. 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 andimpacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-GoI Initiatives.

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.

TEXT BOOKS:

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

REFERENCE BOOKS:

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEE I-Sem **L T P C**

3 1 0 4

2000BS03: MATHEMATICS – III

Course Objectives: To learn

1. Differentiation and integration of complex Valuedfunctions
2. Evaluation of integrals using Cauchy's integralformula
3. Laurent's series expansion of complexfunctions
4. Evaluation of integrals using Residuetheorem
5. A periodic function by Fourier series and a non-periodic function by Fouriertransform
6. Z-transform of a sequence andproperties

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 integraltheorem
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 andcosines
4. Express a non-periodic function as integral representation
5. Understanding the characteristics and properties ofz-transforms
6. To compute inversez-transform
7. To solve difference equations usingz-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 : 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 $\int_{-\infty}^{\infty} f(x)dx$ (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

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

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

TEXT BOOKS:

1. A first course in complex analysis with applications by Dennis G. Zill and Patrick Shanahan, Johns and BartlettPublishers.
2. Higher Engineering Mathematics by Dr. B. S. Grewal, KhannaPublishers.
3. Advanced engineering Mathematics with MATLAB by Dean G.Duffy

REFERENCES:

1.Fundamentals of Complex Analysis by Saff, E. B. and A. D. Snider,Pearson.

2.Advanced Engineering Mathematics by Louis C. Barrett, McGrawHill.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

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

2003ES02: ENGINEERING MECHANICS

COURSE OBJECTIVES:

- To give an insight to students about the behaviour of materials under externalforces.
- The concept of stress, strain, elasticity etc. as applied to various structures under loading are included.
- The student able to learn about concept of fluids, turbines andengines.

COURSE OUTCOMES:

- The student would be exposed to basic mechanical engineeringmachinery.
- The student learned about mechanical components.
- Students understand about engines andturbines.

UNIT-I

Introduction to Mechanics: Basic Concepts, system of Forces Coplanar Concurrent Forces - Components in Space Resultant -Moment of Forces and its Application - Couples and Resultant of Force Systems. Equilibrium of system of Forces: Free body diagrams, Equations of Equilibrium of Coplanar Systems.

UNIT-II

Friction: Types of friction -Limiting friction -Laws of Friction -static and Dynamic Frictions - Motion of Bodies – Ladder, Wedge & Screw, Screw-jack.

UNIT-III

Centroid and Center of Gravity: Introduction – Centroids of lines – Centroids of area - Centroids of Composite figures - Theorem of Pappus -Centre of Gravity of Bodies – Centroids of Volumes – Center of gravity of composite bodies.

UNIT-IV

Area moments of Inertia: Introduction – Definition of Moment of Inertia -Polar Moment of Inertia – Radius of Gyration. Transfer Theorem for Moment of Inertia – Moments of Inertia by integration - Moments of Inertia of Composite Figures.

Mass Moment of Inertia: Introduction - Moment of Inertia of Masses – Radius of gyration - Transfer Formula for Mass Moments of Inertia – Mass moments of inertia by integration - Mass moment of inertia of composite bodies.

UNIT-V

Kinetics: Kinetics of a particle-D'Alemberts principle. Work-energy and power.Principle of conservation of energy- Kinetics of rigid body in translation, rotation-work done-Principle of work-energy.

TEXT BOOKS:

1. A Text Book of Engineering Mechanics/S.S. Bhavikatti/New Age International (P) Limited Publications, New Delhi.
2. Engineering Mechanics Statics and Dynamics/N.H. Dubey/ Mc Graw Hill Education (India) Private Limited, New Delhi.

REFERENCES BOOKS:

1. A Text of Engineering Mechanics /YVD Rao/ K. Govinda Rajulu/ M. Manzoor Hussain / Academic Publishing Company
2. Timoshenko and Young, Engineering Mechanics, 3rd Ed., McGraw Hill Publishers, 2006.

   Engineering Mechanics / Bhattacharyya/ Oxford.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEEI-Sem **L T P C**

3 1 0 4

2002PC01: ELECTRICAL CIRCUIT ANALYSIS

Course Objectives:

- To understand Magnetic Circuits, Network Topology and Three phasecircuits.
- To analyze transients in Electricalsystems.
- To evaluate Network parameters of given Electricalnetwork
- To design basic filterconfigurations

Course Outcomes: At the end of this course, students will demonstrate the ability to

- Apply network theorems for the analysis of electricalcircuits.
- Obtain the transient and steady-state response of electricalcircuits.
- Analyze circuits in the sinusoidal steady-state (single-phase andthree-phase).
- Analyze two port circuit behavior.

UNIT – I

Network Theorems: Maximum Power Transfer Theorem, Reciprocity Theorem, Millman's Theorem, Telligen's Theorem. Compensation Theorem. Analysis of dependent and independent Current and Voltage sources.

Network Topology: Definitions– Graph – Tree, Basic Cutset and Basic Tieset matrices for planar networks – Concept of Duality & Dual networks.

UNIT – II

Two Port Networks: Two Port Networks, terminal pairs, relation of two port variables, two port network parameters-Z,Y,ABCD and hybrid parameters, interconnections of two port networks.

Magnetic Circuits: Faraday's laws of electromagnetic induction – concept of self and mutual inductance – dot convention – coefficient of coupling – composite magnetic circuit - Analysis of series and parallel magnetic circuits.

UNIT III

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

UNIT-IV

Transient Analysis: Solution of first and second order differential equations for series and parallel RL,RC,RLC circuits for DC and AC-Initial and final conditions in network elements. Forced and free response, time constants.different inputs such as step, ramp, pulse and impulse by using Laplace transforms method. convolution integral, inverse Laplace transform, transformed network with initial conditions, poles and zeros, frequency response(magnitude and phase plots).

UNIT – V

Filters: Introduction to filters –low pass – high pass and band pass – RC, RL, filters- constant K and m derived filters and composite filter design.

TEXT BOOKS

1. "William Hayt and Jack E. Kemmerly", "Engineering circuit analysis", Mc Graw Hill Company, 6th edition, 2016.
2. "A. Chakrabarthy", Circuit Theory, Dhanpat Rai, 2005.

REFERENCE BOOKS:

1. "Van Valkenburg", "Network Analysis", PHI, 3rd Edition, 2014
2. "Franklin F Kuo," "Network Analysis & Synthesis", Wiley India PVT. Ltd., second Edition, 2006
3. "K.C. A. Smith & R. E. Alley", "Electrical Circuits", Cambridge University Press, 1992
4. "K. Rajeswaran", "Electric Circuit theory", Pearson Education, 2004.
5. "A. Bruce Carlson", "Circuits", Thomson Publishers, 1999

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEEI-Sem **L T P C**

3 0 0 3

2002PC02: ANALOG ELECTRONICS

Course Objectives:

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

Course Outcomes: Upon completion of the Course, the students will be ableto:

- Design and analyze small signal amplifier circuits applying the biasing techniques learnt earlier.
- Cascade different amplifier configurations to obtain the required overall specifications like Gain, Bandwidth, Input and Output interfacingImpedances.
- Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radioapplications.
- Utilize the Concepts of negative feedback to improve the stability of amplifiers and positive feedback to generate sustainedoscillations.

UNIT-1

P-N Junction Diode: P-N Junction as a Diode, Voltage-Ampere Characteristics, Temperature dependence of VI characteristic, Load Line Analysis, Breakdown Mechanisms in Semiconductor Diodes, Zener Diode Characteristics. Diode as a Switch, Piecewise Linear Diode Characteristics. Rectifiers and Filters : The P-N junction as a Rectifier, Half wave Rectifier, Full wave Rectifier, Bridge Rectifier, Harmonic components in a Rectifier Circuit, Inductor Filters, Capacitor Filters, L-Section Filters, π- Section Filters, Comparison of Filters, Voltage Regulation using Zener Diode.

UNIT-II

Bipolar Junction Transistor: The Junction Transistor, Transistor Current Components, Transistor as an Amplifier, Transistor Construction, BJT Operation, BJT Symbol, Common Base, Common Emitter and Common Collector Configurations, Comparison of CB, CE, and CC AmplifierConfigurations..

Junction FET: The junction field Effect Transistor -Construction, principle of operation, Comparison of BJT and FET.

MOSFET: MOSFET Construction, principle of operation, MOSFET Characteristics in Enhancement and Depletion modes. Comparison of FET and MOSFET.

UNIT-III

Feedback Amplifiers: Concept of feedback Amplifiers, General characteristics of negative feedback amplifiers, Effect of Feedback on Amplifier characteristics, Voltage series, voltageshunt,CurrentseriesandcurrentshuntFeedbackconfigurations,Illustrativeproblems

Oscillators: Conditions for oscillations, Frequency and Amplitude Stability of Oscillators, Generalized analysis of LC Oscillators, Quartz, Hartley, and Colpitt's Oscillators, RC –phase shift and Wein Bridgeoscillators.

UNIT-IV

Large Signal Amplifiers: Class A Power Amplifier, Maximum Efficiency of Class –A Amplifier, Transformer Coupled Amplifier, Push Pull Amplifier complimentary Symmetry Class-B Power Amplifier, Phase Inverters, Transistor Power Dissipation, Thermal Runway, HeatSinks

UNIT-V

Wave Shaping: High Pass, Low Pass RC Circuits, their response for Sinusoidal.

Clippers and Clampers: Diode Clippers, Transistor Clippers, Clipping at Two Independent Levels, Transfer Characteristics of Clippers, Comparators, Clamping Operation Switching characteristics: Transistor as a Switch, Design of Transistor Switch, Transistor SwitchingTimes

Multivibrators: Analysis and Design of Bistable, Monostable, Astable, Multivibrators and Schmitt Trigger usingTransistors.

TEXT BOOKS:

1. Electronic Devices and Circuits, David A. Bell – 5th Edition,Oxford.
2. Electronic Devices and Circuits, S. Salivahanan, N. Suresh Kumar, A Vallvaraj, 5th Edition, MC GRAW HILLEDUCATION.
3. Electronics Circuits and Applications, Md H Rashid, Cengage2014

REFERENCES:

1. Integrated Electronics, Jacob Millman, Christos C Halkias, McGraw HillEducation
2. Electronic Devices and Circuits theory– Robert L. Boylestead, Louis Nashelsky, 11th Edition, 2009,Pearson.
3. Electronic Devices Conventional and current version -Thomas L. Floyd 2015,person

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEEI-Sem **L T P C**

3 0 0 0

2005ES02: PYTHON PROGRAMMING

Course Objectives: This course will enable students to

1. Learn Syntax and Semantics and create Functions in Python.
2. Handle Strings and Files in Python.
3. Understand Lists, Dictionaries and Regular expressions in Python.
4. Understand Python Function and Built-in Functions.

Course Outcomes: The students should be able to:

1. Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
2. Demonstrate proficiency in handling Strings and File Systems.
3. Create, run, and manipulate Python Programs using core data structuresLike Lists, Dictionaries and use Regular Expressions.
4. Create Python function programming

UNIT I

Introduction - 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

UNIT II

Python Identifiers(Literals), Reserved Keywords, Variables, Comments, Lines and Indentations, Quotations, Assigning Values to Variables, Data Types in Python, Mutable Vs Immutable, 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

UNIT III

Slicing & Indexing-Forward Direction Slicing with +ve Step, Backward Direction Slicing with -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 IV

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

Frozen set 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 V

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

BOOKS:

1.Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist‘‘, 2nd edition, Updated for Python 3, Shroff/O‘Reilly Publishers, 2016.

2.R. Nageswara Rao, “Core Python Programming”, dreamtech Python Programming: A Modern Approach, VamsiKurama, Pearson

REFERENCE BOOKS:

1. Core Python Programming, W.Chun, Pearson.

2. Introduction to Python, Kenneth A. Lambert, Cengage Learning Python, Mark Lutz, Orielly

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEEI-Sem **L T P C**

0 0 3 1.5

2002PC61: ANALOG ELECTRONICS LAB

Course Objectives:

- To identify various components and testing of activedevices.
- To study and operation of millimeters, function generators ,regulated power supplies and CRO To know the characteristics of various activedevices.
- To study frequency responseamplifier.

Course Outcomes:

- After Completion of the course the student is able to Apply various devices to real time problems.
- Compute frequency response of variousamplifiers.

Part A: (Only for viva-voce Examination)

ELECTRONIC WORKSHOP PRACTICE (in 3 lab sessions):

1. Identification, Specification, testing of R,L,C components (color codes), Potentiometers (SPDT, DPDT, and DIP), Coils, Gang Condensers, Relays, Bread Board, PCB's

2. Identification, Specification, testing of Active devices: Diodes, BJT, Low power JFET's, MOSFET's, Power Transistors, LED's, LCD's, SCR,UJT.

3. Study and operationof:
   i. Multimeters (Analog andDigital)
   ii. Function Generator
   iii. Regulated PowerSupplies
   iv. CRO

Part B: (For Laboratory Examination – Minimum of 14 experiments)

1. Forward and Reverse Bias V-I characteristics of PN junctionDiode.
2. Zener diode V-I characteristics and Zener diode as voltageregulator.
3. Half Wave rectifier, with and withoutfilters
4. Full wave rectifier with and withoutfilters.
5. Input and output Characteristics of a BJT in CE configuration and calculation of h- parameters.
6. Linear waveShaping
   RC Low Pass Circuit for different time constants RC
   High Pass Circuit for different time constants
7. Non-linear wave shaping
   Transfer characteristics and response of Clippers: Positive and Negative Clippers
   Clipping at two independent levels
   The steady state output waveform of clampers for a square wave input
   Positive and Negative Clampers
   Clamping at different reference voltage
8. Switching characteristics of atransistor

9. Design a BistableMultivibrator and draw itswaveforms
10. Design an AstableMultivibrator and draw itswaveforms
11. Design a MonostableMultivibrator and draw itswaveforms
12. Current Shunt FeedbackAmplifier
13. Voltage Series FeedbackAmplifier
14. RC Phase Shift Oscillator usingTransistors
15. Class A Power Amplifier (Transformerless)
16. Class B Complementary SymmetryAmplifier

PART C: Equipment required for Laboratory:

1. Regulated Power Supplies : (0-30)V
2. CRO's :(0-20)MHz
3. FunctionGenerators :(0-1)MHz
4. Multimeters
5. Decade ResistanceBoxes/Rheostats
6. Decade CapacitanceBoxes
7. Ammeters (Analog or Digital): 0-20 μA, 0-50 μA, 0-100 μA, 0-200 μA, 10mA
8. Voltmeters (Analog or Digital): 0-50V, 0-100V,0-250V

Electronic Components: Resistors, Capacitors, BJTs, Diodes-Ge & Si type, Transistors – NPN, PNP type

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEEI-Sem **L T P C**

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2002PC62: ELECTRICAL CIRCUIT ANALYSIS LAB

Course Objectives:

- To design electrical systems
- To analyze a given network by applying various Network Theorems
- To measure three phase Active and Reactive power.
- To understand Mutual induction.

Course Outcomes: After Completion of this lab the student is able to

- Analyze complex DC and AC linear circuits
- Apply concepts of electrical circuits across engineering
- Evaluate response in a given network by using theorems

The following experiments are required to be conducted as compulsory experiments

1. Verification of Thevenin's and Norton's Theorems.
2. Verification of Superposition and Maximum Power Transfer theorems.
3. Verification of Reciprocity and millmann's theorems.
4. Verification of compensation theorem.
5. Two port network parameters – Z – Y parameters, Analytical verification.
6. Two port network parameters – A, B, C, D & Hybrid parameters, Analytical verification.
7. Determination of resonant frequency by using Parallel Resonance.
8. Separation of Self and Mutual inductance in a Coupled Circuit. Determination of Co-efficient of Coupling.
9. Measurement of Active Power for Star/delta connected balanced load.
10. Measurement of Reactive Power for Star/delta connected balanced load.
11. Measurement of 3-phase power by two wattmeter method for unbalanced loads.
12. Determination of form factor for Non Sinusoidal Waveform.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEE I-Sem

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2000MC04: INDIAN CONSTITUTION

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 tounderstand 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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEE II-Sem **L T P C**

3 1 0 4

2002PC03: ELECTRO MAGNETIC FIELDS

Course Objectives:

- To introduce the concepts of electric field and magneticfield.
- Applications of electric and magnetic fields in the development of the theory for power transmission lines and electricalmachines.

Course Outcomes: At the end of the course, students will demonstrate the ability

- To understand the basic laws ofelectromagnetism.
- To obtain the electric and magnetic fields for simple configurations under staticconditions.
- To analyze time varying electric and magneticfields.
- To understand Maxwell's equation in different forms and differentmedia.
- To understand the propagation of EMwaves.

UNIT – I

Electrostatics: Electrostatic Fields – Coulomb's Law – Electric Field Intensity (EFI) – EFI due to a line and a surface charge – Work done in moving a point charge in an electrostatic field – Electric Potential – Properties of potential function – Potential gradient – Guass's law – Application of Guass's Law – Maxwell's first law, div (D) = ρ_v – Laplace's and Poison's equations – Solution of Laplace's equation in one variable. Electric dipole – Dipole moment – potential and EFI due to an electric dipole – Torque on an Electric dipole in an electric field

UNIT – II

Dielectrics & Capacitance: Behavior of conductors in an electric field – Conductors and Insulators – Electric field inside a dielectric material – polarization – Dielectric – Conductor and Dielectric – Dielectric boundary conditions – Capacitance – Capacitance of parallel plots – spherical co-axial capacitors – with composite dielectrics – Energy stored and energy density in a static electric field – Current density – conduction and Convection current densities – Ohm's law in point form – Equation of continuity

UNIT – III

Magneto Statics: Static magnetic fields – Biot-Savart's law – Magnetic field intensity (MFI) – MFI due to a straight current carrying filament – MFI due to circular, square and solenoid current – Carrying wire – Relation between magnetic flux, magnetic flux density and MFI – Maxwell's second Equation, div(B)=0

Ampere's Law & Applications: Ampere's circuital law and its applications viz. MFI due to an infinite sheet of current and a long current carrying filament – Point form of Ampere's circuital law – Maxwell's third equation, Curl (H)=Jc

UNIT – IV

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

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

UNIT – V

Time Varying Fields: Time varying fields – Faraday's laws of electromagnetic induction – Its integral and point forms – Maxwell's fourth equation, Curl (E)=-∂B/∂t – Statically and Dynamically induced EMFs – Simple problems -Modification of Maxwell's equations for time varying fields – Displacement curren

TEXT BOOKS:

1. "William H. Hayt& John. A. Buck", "Engineering Electromagnetics" ,Mc. Graw-Hill Companies, 7th Edition, 2009.
2. "Sadiku", "Electromagnetic Fields", Oxford Publications, 4th Edition, 2009.

REFERENCE BOOKS:

1. "CR Paul and S. A. Nasar", "Introduction to Electromagnetic", Mc-Graw Hill Publications, 3rd Edition, 1997.
2. "Nathan Ida", "Engineering Electromagnetic", Springer (India) Pvt. Ltd. 2nd Edition, 2015.
3. "D J Griffiths", "Introduction to Electro Dynamics", Prentice-Hall of India Pvt. Ltd, 3rd edition, 1999.
4. D J Griffiths", "Introduction to Electro Dynamics", Pearson New International, 4th edition, 2014.
5. "J. D Kraus", "Electromagnetics", Mc Graw-Hill Inc. 4th edition, 1992.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech. EEE II-Sem **L T P C**

3 0 0 3

2002PC04: SIGNALS & SYSTEMS

Course Objective

The main objectives of the course are:

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

Course Outcomes:

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

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

UNIT I:

INTRODUCTION TO SIGNALS: Elementary Signals- Continuous Time (CT) signals, Discrete Time (DT) signals, Basic Operations on signals, Classification of Signals.

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

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 transform of 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 BPFcharacteristics, Causality and Poly-Wiener criterion for physical realization, relationship between bandwidth and risetime.

UNIT IV:

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

UNIT-V:

LAPLACE TRANSFORMS: Review of Laplace transforms, Inverse Laplace transform, Concept of 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.

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

TEXT BOOKS:

1. Electronic Devices and Circuits, David A. Bell – 5th Edition,Oxford.
2. Electronic Devices and Circuits, S. Salivahanan, N. Suresh Kumar, A Vallvaraj, 5th Edition, MC GRAW HILLEDUCATION.
3. Electronics Circuits and Applications, Md H Rashid, Cengage2014

REFERENCES:

1. Integrated Electronics, Jacob Millman, Christos C Halkias, McGraw HillEducation
2. Electronic Devices and Circuits theory– Robert L. Boylestead, Louis Nashelsky, 11th Edition, 2009,Pearson.
3. Electronic Devices Conventional and current version -Thomas L. Floyd 2015, person

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEEII-Sem **L T P C**

3 1 0 4

2005ES03: DATA STRUCTURES USING PYTHON

Course Objectives:

- To impart the basic concepts of data structures and algorithms.
- To understand concepts about searching and sorting techniques
- To understand basic concepts about stacks, queues, lists trees and graphs.
- To enable them to write algorithms for solving problems with the help of fundamental data Structures

Course Outcomes:

At the end of the course the students are able to:

- For a given Algorithm student will able to analyze the algorithms to determine time & computation complexity and justify the correctness.
- For a given Search problem (Linear Search and Binary Search) student will able to implement it.
- For a given problem of Stacks, Queues and linked list student will able to implement it and analyze the same to determine the time and computation complexity.
- Student will able to implement Graph search and traversal algorithms and determine the time and computation complexity
-

UNIT- I

Basic concepts- Algorithm Specification-Introduction, Recursive algorithms, Data Abstraction Performance analysis- time complexity and space complexity, Asymptotic Notation-Big O, Omega and Theta notations, Introduction to Linear and Non Linear data structures. Singly Linked Lists-Operations-Insertion, Deletion, Circularly linked lists- Operations for Circularly linked lists, Doubly Linked Lists- Operations- Insertion, Deletion. Representation of single, two dimensional arrays.

UNIT- II

Stack ADT, definition, operations, array and linked implementations in C, applications-infix to postfix conversion, Postfix expression evaluation, Queue ADT, definition and operations, array and linked Implementations in C, Circular queues-Insertion and deletion operations.

UNIT- III

Trees – Terminology, Representation of Trees, Binary tree ADT, Properties of Binary Trees, Binary Tree Representations-array and linked representations, Binary Tree traversals, Max Priority Queue ADT-implementation-Max Heap-Definition, Insertion into a Max Heap, Deletion from a Max Heap.

UNIT- IV

Searching- Linear Search, Binary Search, Static Hashing-Introduction, hash tables, hash functions, Overflow Handling. Sorting-Insertion Sort, Selection Sort, Radix Sort, Quick sort, Heap Sort, Comparison of Sorting methods.

UNIT- V

Graphs – Introduction, Definition, Terminology, Graph ADT, Graph Representations- Adjacency matrix, Adjacency lists, Graph traversals- DFS and BFS. Search Trees-Binary Search Trees, Definition, Operations- Searching, Insertion and Deletion, AVL Trees- Definition and Examples, B-Trees-Definition, Comparison of Search Trees.

TEXT BOOKS:

1. Fundamentals of Data structures in C, 2nd Edition, E.Horowitz, S.Sahni and Susan.
2. Data structures A Programming Approach with C, D.S.Kushwaha and A.K.Misra, PHI.

REFERENCE BOOKS:

1. Data structures: A Pseudocode Approach with C, 2nd edition, R.F.Gilberg And B.A.Forouzan, Cengage Learning.
2. Data structures and Algorithm Analysis in C, 2nd edition, M.A.Weiss, Pearson.
3. Data Structures using C, A.M.Tanenbaum,Y. Langsam, M.J.Augenstein, Pearson.
4. Data structures and Program Design in C, 2nd edition, R.Kruse, C.L.Tondo and B.Leung,Pearson.
5. Data Structures and Algorithms made easy in JAVA, 2nd Edition, Narsimha Karumanchi, CareerMonk Publications.
6. Data Structures using C, R.Thareja, Oxford University Press.
7. Data Structures, S.Lipscutz,Schaum's Outlines, TMH. 8. Data structures using C, A.K.Sharma, 2nd edition, Pearson.. 9. Data Structures using C &C++, R.Shukla, Wiley India.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEEII-Sem **L T P C**

3 0 0 3

2002PC05: ELECTRICAL MACHINES – I

Course Objectives:

- To study and understand different types of DC generators, Motors and Transformers, their construction, operation andapplications.
- To analyze performance aspects of various testingmethods.

Course Outcomes: At the end of this course, students will demonstrate the ability to

- Identify different parts of a DC machine & understand itsoperation
- Carry out different testing methods to predetermine the efficiency of DCmachines
- Understand different excitation and starting methods of DCmachines
- Control the voltage and speed of a DCmachines
- Analyze single phase and three phase transformerscircuits.

UNIT-I

D.C. Generators: Principle of Operation – Action of Commutator – constructional features – armature windings – lap and wave windings – simplex and multiplex windings – use of laminated armature – E.M.F Equation. Armature reaction – Cross magnetizing and demagnetizing AT/pole – compensating winding – commutation – reactance voltage – methods of improving commutation. Methods of Excitation – separately excited and self excited generators – build-up of E.M.F - critical field resistance and critical speed - causes for failure to self excite and remedial measures. Load characteristics of shunt, series and compound generators. Need for parallel operation of DC generators, Parallel operation of DC shunt, series, and compound generators.

UNIT-II

D.C Motors: Principle of operation – Back E.M.F. - Torque equation – characteristics and application of shunt, series and compound motors – Armature reaction and commutation. Series Parallel Control. Electric Braking - Rheostatic, Plugging, Regenerative Braking. Testing of D.C. machines - Losses – Constant & Variable losses – Calculation of efficiency – condition for maximum efficiency.

UNIT-III

DC Motor Starters - 3 point starter, 4 point starters, DC Series Motor Starter, Automatic starters, Speed control of D.C. Motors - Armature voltage and field flux control methods Methods of Testing – Direct, Indirect, and Regenerative testing – Brake Test – Swinburne's Test – Hopkinson's Test – Field's Test - Separation of stray losses in a d.c. motor test.

UNIT-IV

Single phase transformers: Types - constructional details-minimization of Hysteresis and Eddy current losses- EMF Equation - Operation on no load and on load - Phasor diagrams Equivalent circuit - losses and efficiency – regulation - All day efficiency - effect of variations of frequency & supply voltage on iron losses. Condition for Maximum Efficiency, output KVA corresponding to maximum efficiency.

UNIT-V

OC and SC tests - Sumpner's test - Predetermination of Efficiency and Regulation-Separation of

losses test - parallel operation with equal and unequal voltage ratios - auto transformers equivalent circuit - comparison with two winding transformers. Poly phase transformers - Poly phase connections - Y/Y, Y/□, □/Y, □/□ and open□. Scott connection.

TEXT BOOKS:

1. E. Fitzgerald and C. Kingsley, "Electric Machinery", New York, McGraw Hill Education, 2013.
2. E. Clayton and N. N. Hancock, "Performance and design of DC machines", CBS Publishers,2004.

REFERENCE BOOKS:

3. M. G. Say, "Performance and design of AC machines", CBS Publishers,2002.
4. P. S. Bimbhra, "Electrical Machinery", Khanna Publishers,2011.
5. J. Nagrath and D. P. Kothari, "Electric Machines", McGraw Hill Education,2010.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEEII-Sem **L T P C**

3 0 0 3

2002PC06: POWER SYSTEMS – I

Course Objectives:

- To understand the different types of power generatingstations.
- To examine A.C. and D.C. distributionsystems.
- To understand and compare overhead line insulators and Insulatedcables.
- To illustrate the economic aspects of power generation and tariffmethods.
- To evaluate the transmission line parameterscalculations
- To understand the concept ofcorona

Course Outcomes: At the end of this course, students will demonstrate the ability to

- Understand the concepts of powersystems.
- Understand the operation of conventional generating stations and renewable sources of electricalpower.
- Evaluate the power tariffmethods.
- Determine the electrical circuit parameters of transmissionlines
- Understand the layout of substation and underground cables andcorona.

UNIT - I

Generation of Electric Power

Conventional Sources (Qualitative): Hydro station, Steam Power Plant, Nuclear Power Plant and Gas Turbine Plant. Non-Conventional Sources (Qualitative): Ocean Energy, Tidal Energy, Wave Energy, wind Energy, Fuel Cells, and Solar Energy, Cogeneration and energy conservation and storage.

UNIT -II

Economics of Generation: Introduction, definitions of connected load, maximum demand, demand factor, load factor, diversity factor, Load duration curve, number and size of generator units. Base load and peak load plants. Cost of electrical energy-fixed cost, running cost, Tariff on charge to customer.

UNIT - III

Overhead Line Insulators & Insulated Cables: Introduction, types of insulators, Potential distribution over a string of suspension insulators, Methods of equalizing the potential, testing of insulators. Introduction, insulation, insulating materials, Extra high voltage cables, grading of cables, insulation resistance of a cable, Capacitance of a single core and three core cables, Overhead lines versus underground cables, types ofcables.

UNIT - IV

Inductance & Capacitance Calculations of Transmission Lines: Line conductors, inductance and capacitance of single phase and three phase lines with symmetrical and unsymmetrical spacing, Composite conductors-transposition, bundled conductors, and effect of earth on capacitance.

Corona: Introduction, disruptive critical voltage, corona loss, Factors affecting corona loss and methods of reducing corona loss, Disadvantages of corona, interference between power and Communication lines.

UNIT-V

A.C. Distribution: Introduction, AC distribution, Single phase, 3-phase, 3 phase 4 wire system, bus bar arrangement, Selection of site for substation. Voltage Drop Calculations (Numerical Problems) in A.C. Distributors for the following cases: Power Factors referred to receiving end voltage and with respect to respective load voltages.

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

TEXT BOOKS:

1. W.D.Stevenson –Elements of Power System Analysis, Fourth Edition, McGraw Hill,1984.
2. C.L. Wadhwa –Generation, Distribution and Utilization of Electrical Energy, Second Edition, New Age International,2009.

REFERENCE BOOKS:

1. C.L. Wadhwa –Electrical Power Systems, Fifth Edition, New Age International,2009
2. M.V. Deshpande –Elements of Electrical Power Station Design, Third Edition, Wheeler Pub. 1998
3. H.Cotton&H. Barber-The Transmission and Distribution of Electrical Energy, Third "V.K Mehta and Rohit Mehta", "Principles of Power Systems", S. Chand& Company Ltd, New Delhi,2004.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEE II-Sem **L T P C**

3 0 0 3

2002PC07: DIGITAL ELECTRONICS

Course Objectives:

- To learn basic techniques for the design of digital circuits and fundamental concepts used in the design of digitalsystems.
- To understand common forms of number representation in digital electronic circuits and to be able to convert between differentrepresentations.
- To implement simple logical operations using combinational logiccircuits
- To design combinational logic circuits, sequential logiccircuits.
- To impart to student the concepts of sequential circuits, enabling them to analyze sequential systems in terms of statemachines.
- To implement synchronous state machines usingflip-flops.

Course Outcomes: At the end of this course, students will demonstrate the ability to

- Understand working of logic families and logicgates.
- Design and implement Combinational and Sequential logic circuits.
- Understand the process of Analog to Digital conversion and Digital to Analogconversion.
- Be able to use PLDs to implement the given logicalproblem.

UNIT -I:

Number System and Gates: Number Systems, Base Conversion Methods, Complements of Numbers, Codes- Binary Codes, Binary Coded Decimal Code and its Properties, Excess-3 code, Unit Distance Code, Error Detecting and Correcting Codes, Hamming Code. Digital Logic Gates, Properties of XOR Gates, Universal Logic Gates.

UNIT -II:

Boolean Algebra and Minimization: Basic Theorems and Properties, Switching Functions, Canonical and Standard Forms, Multilevel NAND/NOR realizations. K- Map Method, up to Five variable K-Maps, Don't Care Map Entries, Prime and Essential prime Implications, Quine Mc Cluskey Tabular Method

UNIT -III:

Combinational Circuits Design: Combinational Design, Half adder, Full adder, Half subtractor, Full subtractor, Parallel binary adder/subtracor, BCD adder, Comparator, decoder, Encoder, Multiplexers, DeMultiplexers, Code Converters.

UNIT -IV:

Sequential Machines Fundamentals: Introduction, Basic Architectural Distinctions between Combinational and Sequential circuits, classification of sequential circuits, The binary cell, The S-R-Latch Flip-Flop The D-Latch Flip-Flop, The "Clocked T" Flip-Flop, The " Clocked J-K" Flip-Flop, Design of a Clocked Flip-Flop, Conversion from one type of Flip-Flop to another, Timing and Triggering Consideration.

UNIT -V:

Sequential Circuit Design and Analysis: Introduction, State Diagram, Analysis of Synchronous

Sequential Circuits, Approaches to the Design of Synchronous Sequential Finite State Machines, Design Aspects, State Reduction, Design Steps, Realization using Flip-Flops. Counters – Design of Asynchronous and Synchronous counters, Decade Counter, Register- Shift Register, Bidirectional Shift Register,universal shifteregister,shift registers using Ring Counter

TEXT BOOKS:

1. R. P. Jain, "Modern Digital Electronics", McGraw Hill Education,2009.
2. M. M. Mano, "Digital logic and Computer design", Pearson Education India,2016.

REFERENCE BOOKS:

3. Kumar, "Fundamentals of Digital Circuits", Prentice Hall India,2016.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEEII-Sem **L T P C**

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2002PC63: DIGITAL ELECTRONICS LAB

COURSE OBJECTIVES

- To enable the students to implement the digital circuits using logic gates
- To know the concepts of Combinational Circuits
- To understand the concepts of Flipflops,registers & Counters

CORSE OUTCOMES

- Able to demonstrate the digital circuits using Logic gates
- Able to Identify the various digital ICs and understand their operation.
- Able to Design simple logic circuits.

Nore: Minimum Twelve experiments to be conducted

LIST OF EXPERIMENTS

1. Study of logic gates.
2. Design and implementation of adders and subtractors using logic gates.
3. Design and implementation of code converters using logic gates.
4. Design and implementation of 4-bit binary adder/subtractor.
5. Design and implementation of encoder and decoder using logic gates
6. Design a 4 –bit Gray to Binary and Binary to Gray Converter.
7. Design a 450 KHz clock using NAND / NOR gates.
8. Design a 16 x 1 multiplexer using 8 x 1 multiplexer.
9. Implementation of the given Boolean function using logic gates in both SOP and POS forms.
10. Verification of state tables of RS, JK, T and D flip-flops using NAND & NOR gates.
11. Implementation and verification of Decoder and Encoder using logic gates
12. Implementation of SISO, SIPO, PISO and PIPO shift registers using flip-flops.
13. Design a 4 bit Comparator using gate\IC
14. Design and Implement a Decade counter.

TEXT BOOKS:

1. R. P. Jain, "Modern Digital Electronics", McGraw Hill Education,2009.
2. M. M. Mano, "Digital logic and Computer design", Pearson Education India,2016.

REFERENCES:

1. A. Kumar, "Fundamentals of Digital Circuits", Prentice Hall India, 2016.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEEII-Sem **L T P C**

0 0 3 1.5

2002PC64: ELECTRICAL MACHINES LAB – I

COURSE OBJECTIVE:

1. The Students will be able to conduct testing and experimental procedures on different types of Electrical DC Machines.
2. A chance to practice different types of wiring and device connections.
3. The Students will have capability to analyze the operation of electric machines under different loading conditions.

COURSE OUTCOME:

1. To impart knowledge on Constructional details, principle of operation, Performance, starters and speed control of DC Machines
2. Testing of DC Motors.
3. To Understand the Different Types of Tests on Motors and Generators.
4. To understand the characteristics of motors and generators.
5. To understand the concepts of Speed Control of Dc Motors.

LIST OF EXPERIMENTS

1. Magnetization characteristics of DC shunt generator.
2. Load test on DC shunt generator.
3. Load test on DC series generator
4. Load test on DC compound generator.
5. Hopkinson's test on DC shunt machines.
6. Fields test on DC series machines.
7. Swinburne's test and speed control of DC shunt motor.
8. Brake test on DC compound motor.
9. Brake test on DC shunt motor.
10. Retardation test on DC shunt motor.
11. Separation of losses in DC shunt motor.

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MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

II Year B.Tech.EEEII-Sem **L T P C**

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2000MC03: HUMAN VALUES & 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 ProfessionalEthics.
2. Professional Ethics: R. Subramanian, Oxford University Press,2015.
3. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press2015.

REFERENCE BOOKS:

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

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year I Sem **L/T/P/C**

3/0/0/3

2000HS03: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Course 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.

Course 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.

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year I Sem **L/T/P/C**
3/0/0/3

2000HS02: PROFESSIONAL ENGLISH

INTRODUCTION:

English is a tool for global communication and is the dominant language which is sweeping almost all the fields in the world. It has become a necessity for people to speak in English comfortably, if they want to enter the global workforce. Hence, the course is designed to help the students to meet the global standards. Each unit focuses on English skill-set to improve: Interview skills, giving presentations and professional etiquette.

OBJECTIVES:

- To enrich students to express themselves appropriately and fluently in professional contexts.
- To enhance their employability through regular participation in group discussions and interview skills.
- To lay foundation with writing strategies for the futurework place needs.
- To acquaint students with different components of professionalpresentation skills.
- To equip students with necessary training in listening to comprehend dialects of English language.

OUTCOMES:

Students will be able to:

- Draft coherent and unified paragraphs with adequatesupporting details.
- Demonstrate problem solving skills, decision-making skills,analyticalskills.
- Comprehend and apply the pre-interview preparation techniques for successful interview.
- Achieve expertise in writing resume and coverletterformats.
- Understand the steps of writing 'ReportsandAbstract'.

UNIT I: FOCUS ON LANGUAGE

Parts of speech - nominal compounds, noun phrases - relative pronoun - adjective - numerical, comparison and contrast, collocation and word combinations - verb - preposition and relative - conjunction- connectives, expressions of purpose and function, cause and effect - articles - adjectives - sentence pattern - tenses - voice - rewriting the sentences in impersonal/abbreviated passive grammatical structures - concord - sentence level verb noun agreement - gerund - rewriting infinitive into gerund - imperative - rewriting imperative into recommendation using should - word formation - varied grammatical function of the same word - affixes - prefixand suffix, number prefix, negative prefix - reported speech - editing strategies - conditional structures - real, unreal, no possibility, zero condition.
writing formal definition - abbreviation and acronym - idioms and phrases ,varieties of English - British versus American.

UNIT II: LISTENING SKILLS

Comprehension practice - vocabulary development - familiarity to varied types of spoken English and accents - developing ability to understand audio and video media - aiming at overcoming barriers to listening - listening to documentaries, radio news broadcasts, TV news telecasts - active listening in discussions and to lectures - taking notes while listening - extracting information from listening.

UNIT III: SPEAKING SKILLS

Oral practice - role play - interplay - seminar - transcoding visual into oral - participating in short and longer conversation - voice record, replay, correction of intonation, pronunciation and flow of speech - phonemes - vowels, consonants, stress, rhythm, intonation - group discussion - participative learning -

acquiring proficiency, fluency, accuracy in oral communication - speaking practice - developing confidence - extempore speech - learning professional/conversational etiquette – Oral presentation skills.

UNIT IV: READING SKILLS

Vocabulary extension - improving vocabulary - intensive reading - reading strategies - identifying topic sentence - guessing meaning from content - picking out specific information - professional reading - reading practice - predicting the content, critical and analytical reading - reading articles in English newspapers, sports magazines, encyclopedias - reading aloud, use of stress and intonation - reading and comprehending technical materials - cloze reading.

UNIT V: WRITING SKILLS

Discourse cohesion - improving writing skills, avoiding common grammatical errors in academic writing - extending the hints - writing shorter sentences - punctuation - dialogue writing - paragraph writing, problems and solutions, achieving coherence, transition words, sequence words - essays of descriptive and argumentative - writing instructions, use of imperatives - jumbled sentences into sequential paragraph using linguistic clues - report writing - technical reports, industry visit reports, events reports - writing recommendations - letter writing - formal and informal letters, e-mail writing - job application and resume, permission for in-plant training, business correspondence letters, calling for quotation, placing order, lodging complaint, persuasive letters - assignment writing - mini-project –telephonic etiquette-transcoding - transferring of information from text to pictorial/graphical representation and vice versa.

* Exercises apart from the text book shall also be referred for classroom tasks.

TEXT BOOKS:

1. Practical English Usage. Michael Swan.OUP.1995.
2. Remedial English Grammar. F.T.Wood.Macmillan.2007
3. On Writing Well. William Zinsser. Harper ResourceBook.2001

REFERENCE BOOKS:

1. Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge UniversityPress.2006.
2. Communication Skills. Sanjay Kumar and PushpLata. Oxford UniversityPress.2011.
3. Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. OxfordUniversityPress

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year I Sem **L/T/P/C**

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2002PC08: CONTROL SYSTEMS

COURSE OBJECTIVES:

- To understand the different ways of system representations such as Transfer function representation and state space representations and to assess the system dynamic response.
- To assess the system performance using time domain analysis and methods for improving it.
- To assess the system performance using frequency domain analysis and techniques for improving the performance.
- To design various controllers and compensators to improve system performance.

COURSE OUTCOMES:

After completion of this course the student is able

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

UNIT-I

Introduction to Control Problem: Industrial Control examples. Mathematical models of physical systems. Control hardware and their models. Transfer function models of linear time-invariant systems. Feedback Control: Open-Loop and Closed-loop systems. Benefits of Feedback. Block diagram algebra-Representation by Signal flow graph - Reduction using mason's gain formula.

UNIT - II

Time Response Analysis of Standard Test Signals: Time response of first and second order systems for standard test inputs. Application of initial and final value theorem. Design specifications for second-order systems based on the time-response. Steady state errors and error constants.Concept of Stability. Routh-Hurwitz Criteria. Relative Stability analysis. Root-Locus technique. Construction of Root-loci,effects of adding poles and zeros to G(s) H(s) on the root loci.

UNIT - III

Frequency-Response Analysis: Relationship between time and frequency response, Polar plots, Bode plots. Determination of Frequency domain specifications and transfer function from the Bode Diagram. Nyquist stability criterion. Relative stability using Nyquist criterion – gain and phase margin. Closed-loop frequency response.

UNIT - IV

Introduction to Controller Design: Stability, steady-state accuracy, transient accuracy, disturbance rejection, insensitivity and robustness of control systems. Root-loci method of feedback controller design. Design specifications in frequency-domain. Frequency-domain methods of design. Application of Proportional, Integral and Derivative Controllers, Lead and Lag compensation in designs. Analog and Digital implementation of controllers.

UNIT-V

State Variable Analysis and Concepts of State Variables: State space model. Derivation of state models from block diagrams. Diagonalization of State Matrix. Solution of state equations. Eigen values and Stability Analysis. Concept of controllability and observability. Difference Equations. State-space models of linear discrete-time systems. Stability of linear discrete-time systems.

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.
3. "Katsuhiko Ogata", "Modern Control Engineering", Prentice Hall of India Pvt. Ltd., 3 rd edition, 1998.

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year I Sem **L/T/P/C**

3/0/0/3

2002PC09: ELECTRICAL MACHINES-II

COURSE OBJECTIVES:

- To deal with the detailed analysis of polyphase induction motors & Synchronous generators and motors
- To understand operation, construction and types of single phase motors and their applications in house hold appliances and control systems.
- To introduce the concept of parallel operation of synchronous generators.
- To introduce the concept of regulation and its calculations.

COURSE OUTCOMES:

After this course, the student

- Identify different parts of transformers and induction motors and specify their functions
- Understand the operation of transformers and induction motors
- Carry out different testing methods and assess the performance of transformers and induction motors
- Start and control the induction motor

UNIT - I

Poly-Phase Induction Machines: Constructional details of cage and wound rotor machines production of a rotating magnetic field - principle of operation - rotor EMF and rotor frequency - rotor reactance, rotor current and Power factor at standstill and during operation.

UNIT - II

Characteristics of Induction Machines: Rotor power input, rotor copper loss and mechanical power developed and their inter relation-torque equation-deduction from torque equation - expressions for maximum torque and starting torque - torque slip characteristic - equivalent circuit - phasor diagram ,Losses and efficiency - crawling and cogging -.No-load Test and Blocked rotor test –Predetermination of performance- Methods of starting and starting current and Torque calculations.

Speed Control Methods: Change of voltage, change of frequency, voltage/frequency, injection of an EMF into rotor circuit (qualitative treatment only)-induction generator-principle of operation.

UNIT - III

Synchronous Machines: Constructional Features of round rotor and salient pole machines –

Armature windings – Integral slot and fractional slot windings; Distributed and concentrated windings – distribution, pitch and winding factors – E.M.F Equation. Harmonics in generated e.m.f.–suppression of harmonics – armature reaction - leakage reactance – synchronous reactance and impedance–experimental determination - phasor diagram – load characteristics. Regulation by synchronous impedance method, M.M.F. method, Z.P.F. method and A.S.A. methods – salient pole alternators – two reaction analysis – experimental determination of Xd and Xq (Slip test) Phasor diagrams – Regulation of salient pole alternators.

UNIT - IV

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

Synchronous Motors: Theory of operation – phasor diagram – Variation of current and power factor with excitation – synchronous condenser – Mathematical analysis for power developed .- hunting and its suppression – Methods of starting – synchronous induction motor.

UNIT – V:

Single Phase & Special Machines: Single phase induction motor – Constructional features-Double revolving field theory – Cross field theory, Equivalent circuit ,Determination of parameters- split-phase motors – shaded pole motor. Stepper motors, Reluctance motors, Applications.

TEXT BOOKS:

1. "I. J. Nagrath & D. P. Kothari", "Electric Machines", Tata Mc Graw Hill, 7th Edition, 2009
2. "PS Bhimbra", "Electrical machines", Khanna Publishers, 2014

REFERENCE BOOKS:

1. "M. G. Say", "Performance and Design of AC Machines", CBS Publishers, 3rd Edition, 2002.
2. "A.E. Fitzgerald, C. Kingsley and S. Umans", "Electric machinery", Mc Graw Hill Companies, 7th edition, 2013
3. "Langsdorf", "Theory of Alternating Current Machinery", Tata McGraw-Hill Companies, 2nd edition, 1984.
4. "M.V Deshpande", "Electrical Machines", Wheeler Publishing, 2011

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year I Sem **L/T/P/C**

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2002PC65: CONTROL SYSTEMS & SIMULATION LAB

COURSE OBJECTIVE:

1. It is aimed to introduce to the students the principles and applications of control systems in everyday life.
2. The basic concepts of time domain analysis solutions to time invariant systems and also deals with the different aspects of stability analysis of systems in frequency domain and time domain.

COURSE OUTCOME:

1. the student gets a thorough knowledge on open loop and closed loop control systems
2. Able to obtain feed back in control systems mathematical modeling and transfer function derivation of translational and rotational systems.
3. Able to obtain Transfer functions of synchros AC and DC servo motors
4. Time response analysis of different ordered systems through their characteristic equation and time domain specifications
5. Stability analysis of control system in s-domain through Bode Plot, Nyquist Plot and Root Locus techniques through Simulation and MATLAB.
6. Students can be able to apply the above conceptual things to real world electrical and electronics problems and applications

LIST OF EXPERIMENTS

1. Time Response of Second Order System
2. Characteristics of Synchros
3. Characteristics of Ac Servomotor
4. Characteristics of Magnetic Amplifiers
5. Temperature Controller Using PID
6. Effect of P, PI, PID Controller on a Second Order System
7. Effect of Feedback on DC Servomotor Speed – Torque Characteristics
8. Transfer Function of DC Motor
9. Transfer Function of DC Generator
10. Programmable Logic Controller
11. Lag & Lead Compensation – Magnitude & Phase Plot
12. Simulation of Stability Analysis (Bode Plot, Root Locus, Nyquist Plot) of a Linear Time Invariant System .
13. Simulation of State Space Model for Classical Transfer Function
14. Simulation of OP – AMP Based Integrator & Differentiator.
15. Simulation of Linear System Analysis Using MATLAB

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year I Sem **L/T/P/C**

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2002PC66: ELECTRICAL MACHINES LAB – II

COURSE OBJECTIVE:

1. Understand the concept of efficiency and the short circuit impedance of a three-phase transformer from no-load test, winding resistance, short circuit test and load test
2. Experimentally obtain the load characteristics, starting current and starting torque of a squirrel-cage induction motor and to derive circuit parameters from no-load and blocked-rotor tests
3. Understand the effect of unbalanced loading on a three-phase transformer with different connections, and the effects and limitations of each connection.

COURSE OUTCOME:

1. Gets the thorough knowledge on operational characteristics of AC machines.
2. The ability to conduct testing and experimental procedures on different types of electrical machines
3. The capability to analyze the operation of electric machines under different loading conditions.

LIST OF EXPERIMENTS

1. Brake test/load test on 3 phase induction motor
2. Regulation of 3-phase alternator by EMF and MMF methods.
3. OC and SC test on 1-ph transformer
4. No load and blocked rotor test on 3-phase induction motor.
5. Efficiency of Three phase alternator
6. Equivalent circuit of single-phase induction motor.
7. Determination of X_d and X_q of a salient pole synchronous machine.
8. V and inverted V curve of a three phase synchronous motors
9. Sumpner's test on a pair of 1_ph transformers
10. Parallel operation of 1-ph transformer
11. Separation of core losses of a single phase transformer
12. Scott connection of transformers

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year I Sem **L/T/P/C**

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2000MC06: INDIAN TRADITIONAL KNOWLEDGE

Course Objectives:

- To facilitate the students with the concepts of Indian traditional knowledge and to make them understand the Importance of roots of knowledge system.

Course Outcomes:

- After completion of the course, students will be able to:
- 1. Upon completion of the course, the students are expected to:
- 2. Understand the concept of Traditional knowledge and its importance
- 3. Know the need and importance of protecting traditional knowledge.
- 4. Know the various enactments related to the protection of traditional knowledge.
- 5. Understand the concepts of Intellectual property to protect the traditional knowledge.

UNIT 1

Introduction to traditional knowledge: Define traditional knowledge, nature and characteristics, scope and importance, kinds of traditional knowledge, the physical and social contexts in which traditional knowledge develop, the historical impact of social change on traditional knowledge systems. Indigenous Knowledge (IK), characteristics, traditional knowledge vis-à-vis indigenous knowledge, traditional knowledge Vs western knowledge traditional knowledge vis-à-vis formal knowledge

UNIT : II

Protection of traditional knowledge: the need for protecting traditional knowledge Significance of TK Protection, value of TK in global economy, Role of Government to harness TK.

UNIT : III

Legal frame work and TK:

A: The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, Plant Varieties Protection and Farmer's Rights Act, 2001 (PPVFR Act);

B: The Biological Diversity Act 2002 and Rules 2004, the protection of traditional knowledge bill, 2016. Geographical indicators act 2003.

UNIT : IV:

Traditional knowledge and intellectual property: Systems of traditional knowledge protection, Legal concepts for the protection of traditional knowledge, Certain non IPR mechanisms of traditional knowledge protection, Patents and traditional knowledge, Strategies to increase protection of traditional knowledge, global legal FORA for increasing protection of Indian Traditional Knowledge.

UNIT : V

Traditional knowledge in different sectors: Traditional knowledge and engineering, Traditional medicine system, TK and biotechnology, TK in agriculture, Traditional societies depend on it for their food and healthcare needs, Importance of conservation and sustainable development of environment, Management of biodiversity, Food security of the country and protection of TK.

Reference Books:

1. Traditional Knowledge System in India, by Amit Jha, 2009.
2. Traditional Knowledge System and Technology in India by Basanta Kumar Mohanta and Vipin Kumar Singh, Pratibha Prakashan 2012.
3. Traditional Knowledge System in India by Amit Jha Atlantic publishers, 2002
4. "Knowledge Traditions and Practices of India" Kapil Kapoor1, Michel Danino2

E-Resources:

1. https://www.youtube.com/watch?v=LZP1StpYEPM
2. http://nptel.ac.in/courses/121106003/

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year I Sem **L/T/P/C**

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PROFESSIONAL ELECTIVE –I

2002PE01: WIND & SOLAR ENERGY SYSTEMS

COURSE OBJECTIVES:

- To understand the fundamental energy sourses
- To study and to to learn how to design the solar and wind energy generation

COURSE OUTCOMES:

Student will be able to understand

- How to design solar and wind energy systems
- Photo voltaic system performance and design
- Wind energy application and knowledge on wind generation

UNIT-I

Fundamentals of Energy Science and Technology: Introduction, Energy, Economy and Social Development, Classification of Energy Sources, Importance of Non -conventional Energy Sources, Salient features of Non-conventional Energy Sources, World Energy Status, Energy Status in India.

Energy Conservation and Efficiency: Introduction, Important Terms and Definitions, Important Aspects of Energy Conservation, Global Efforts, Achievements and Future Planning, Energy Conservation/Efficiency Scenario in India, Energy Audit, Energy Conservation Opportunities.

Energy Storage: Introduction, Necessity of Energy Storage, Specifications of Energy Storage Devices.

UNIT 2

Solar Energy-Basic Concepts: Introduction, The Sun as Source of Energy, The Earth, Sun, Earth Radiation Spectrum, Extraterrestrial and Terrestrial Radiations, Spectral Power Distribution of Solar Radiation, Depletion of Solar Radiation. Measurement of Solar Radiation, Solar Radiation Data, Solar Time, Solar Radiation Geometry, Solar Day Length, Extraterrestrial Radiation on Horizontal Surface, Empirical Equations for Estimating Terrestrial Solar Radiation on Horizontal Surface, Solar Radiation on Inclined Plane Surface.

UNIT-3

Solar Thermal Systems: Introduction, Solar Collectors, Solar Water Heater, Solar Passive Space Heating and Cooling Systems, Solar Industrial Heating Systems, Solar Refrigeration and Air Conditioning Systems, Solar Cookers.

Solar Photovoltaic Systems: Introduction, Solar Cell Fundamentals, Solar Cell Characteristics, Solar Cell Classification, Solar Cell Technologies, Solar Cell, Module, and Array Construction, Maximizing the Solar PV Output and Load Matching. Maximum Power Point Tracker. Balance of System Components, Solar PV Systems, Solar PV Applications.

UNIT-4

Wind Energy: Introduction, Basic Principles of Wind Energy Conversion, History of Wind Energy, Wind Energy Scenario – World and India. The Nature of the Wind, The Power in the Wind, Forces on the Blades, Wind Energy Conversion, Wind Data and Energy Estimation, Site Selection Considerations
Wind energy systems: Environment and Economics Environmental benefits and problems of wind energy, Economics of wind energy, Factors influence the cost of energy generation, machine parameters, Life cycle cost analysis.

UNIT-5

Basic Components of a Wind Energy Conversion(WEC) System: Classification of WEC systems, Advantages and Disadvantages of WECS, Types of Wind Machines (Wind Energy Collectors), Analysis of Aerodynamic Forces Acting on the Blade, Performance of Wind- machines, Generating Systems, Energy Storage, Applications of Wind Energy, Environmental Aspects.

TEXT BOOKS/REFERENCE BOOKS:

1. Goswami DY. Kreith F. Kreider JF. Principles of Solar Engineering, Taylor & Francis, 1999
2. Tiwari GN. Solar Energy, Fundamentals design, modeling and Applications. Narosa, 2002
3. Duffie JA. Beckman WA. Solar Engineering of Thermal Processes, John Wiley, 2006
4. Kishore VVN. Renewable Energy Engineering and Technologies, TERI, 2009
5. Johnson GL. Wind Energy Systems, (Electronic Edition), Prentice Hall Inc, 2006
6. Mathew S. Wind Energy: Fundamentals, Resource Analysis and Economics. Springer, 2006
7. Burton T. Sharpe D. Jenkins N. Bossanyi E. Wind Energy Handbook. John Wiley, 2001
8. Jha AR. Wind Turbine Technology, CRC Press, Taylor & Francis, 2011
9. Jain P. Wind Energy Engineering. McGraw-Hill 2011
10. Nag P K. Power Plant Engineering, 3rd Edition, Tata McGraw Hill, 2008.

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year I Sem **L/T/P/C**

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PROFESSIONAL ELECTIVE –I

2002PE02: HIGH VOLTAGE ENGINEERING

COURSE OBJECTIVES:

- To understand what is high voltage engineering and its application.
- To attain the knowledge of different types of insulation medium and their breakdown phenomenon.
- To construct the circuits for high voltage generation and design circuits for measurement of high voltage.
- To understand the different causes for over voltage for high voltage equipment.
- Able to test the high voltage equipment for their withstand of insulation under different conditions.

COURSE OUTCOMES:

After completing this course the student must demonstrate the knowledge and ability to:

- Can define what high voltage engineering is and illustrate its applications.
- Can differentiate types of insulation medium and their breakdown phenomenon.
- Can understand construction of circuits for high voltage generation and design of circuits for measurement of high voltage
- Can identify different causes for over voltage for high voltage equipment.
- Can test the high voltage equipment for their withstand of insulation under different conditions

UNIT - I

Breakdown in Gases

Ionization processes and de-ionization processes, Types of Discharge, Gases as insulating materials, Breakdown in Uniform gap, non-uniform gaps, Townsend's theory, Streamer mechanism, Corona discharge, Paschen's law

Breakdown in Liquid and Solid Insulating Materials

Breakdown in pure and commercial liquids, Solid dielectrics and composite dielectrics, intrinsic breakdown, electromechanical breakdown and thermal breakdown, Partial discharge, applications of insulating materials.

UNIT - II

Generation of High Voltages

Generation of high voltages, generation of high D. C. and A.C. voltages, generation of impulse voltages, generation of impulse currents, tripping and control of impulse generators.

UNIT- III

Measurements of High Voltages and Currents

Peak voltage, impulse voltage and high direct current measurement method, cathode ray oscillographs for impulse voltage and current measurement, measurement of dielectric constant and loss factor, partial discharge measurements.

UNIT - IV

LIGHTNING AND SWITCHING OVER-VOLTAGES

Charge formation in clouds, Stepped leader, Dart leader, Lightning Surges. Natural causes for over voltages, Switching over voltages, Protection against over-voltages, Surge diverters, Surge modifiers.

UNIT - V

High Voltage Testing of Electrical Apparatus and High Voltage Laboratories Various standards for HV Testing of electrical apparatus, IS, IEC standards, Testing of insulators and bushings, testing of isolators and circuit breakers, testing of cables, power transformers and some high voltage equipment, High voltage laboratory layout, indoor and outdoor laboratories, testing facility requirements, safety precautions in H. V. Labs.

TEXT BOOKS

1. High Voltage Engineering, M.S.Naidu and V. Kamaraju, TMH Publications.
2. High Voltage Engineering, C.L.Wadhwa, New Age Internationals (P) Limited.

REFERENCE BOOKS

1. High Voltage Engineering: Fundamentals, E.Kuffel, W.S.Zaengi, J.Kuffel by Elsevier.
2. High Voltage Insulation Engineering, Ravindra Arora, Wolfgang Mosch, New Age International (P) Limited.
3. High Voltage Engineering, Theory and Practice, Mazen Abdel Salam, Hussein Anis, Ahdan El-Morshedy, Roshdy Radwan, Marcel Dekker

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year I Sem **L/T/P/C**

3/0/0/3

PROFESSIONAL ELECTIVE –I

2002PE03: LINE COMMUTATED ACTIVE RECTIFIERS

Course Objectives:

- To analyse controlled rectifier circuits
- To design and understand line commutated active rectifiers

Course Outcomes:

At the end of this course, students will demonstrate the ability to

- Analyse controlled rectifier circuits.
- Understand the operation of line-commutated rectifiers – 6 pulse and multi-pulse configurations.
- Understand the operation of PWM rectifiers – operation in rectification and regeneration modes and lagging, leading and unity power factor mode.

UNIT 1: Diode rectifiers with passive filtering

Half-wave diode rectifier with RL and RC loads; 1-phase full-wave diode rectifier with L, C and LC filter; 3-phase diode rectifier with L, C and LC filter; continuous and discontinuous conduction, input current waveshape, effect of source inductance; commutation overlap.

UNIT 2: Thyristor rectifiers with passive filtering

Half-wave thyristor rectifier with RL and RC loads; 1-phase thyristor rectifier with L and LC filter; 3-phase thyristor rectifier with L and LC filter; continuous and discontinuous conduction, input current waveshape.

UNIT 3: Multi-Pulse converter

Review of transformer phase shifting, generation of 6-phase ac voltage from 3-phase ac, 6- pulse converter and 12-pulse converters with inductive loads, steady state analysis, commutation overlap, notches during commutation.

Single-phase ac-dc single-switch boost converter

Review of dc-dc boost converter, power circuit of single-switch ac-dc converter, steady state analysis, unity power factor operation, closed-loop control structure.

UNIT 4: Ac-dc bidirectional boost converter

Review of 1-phase inverter and 3-phase inverter, power circuits of 1-phase and 3-phase ac-dc boost converter, steady state analysis, operation at leading, lagging and unity power factors. Rectification and regenerating modes. Phasor diagrams, closed-loop control structure.

UNIT 5 : Isolated single-phase ac-dc flyback converter

Dc-dc flyback converter, output voltage as a function of duty ratio and transformer turns ratio. Power circuit of ac-dc flyback converter, steady state analysis, unity power factor operation, closed loop control structure.

TEXT / REFERENCES:

1. G. De, "Principles of Thyristorised Converters", Oxford & IBH Publishing Co, 1988.
2. J.G. Kassakian, M. F. Schlecht and G. C. Verghese, "Principles of Power Electronics", Addison- Wesley, 1991.
3. L. Umanand, " Power Electronics: Essentials and Applications", Wiley India, 2009.
4. N. Mohan and T. M. Undeland, " Power Electronics: Converters, Applications and Design", John Wiley & Sons, 2007.
5. R. W. Erickson and D. Maksimovic, "Fundamentals of Power Electronics", Springer Science & Business Media, 2001

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year II Sem **L/T/P/C**

3/0/0/3

2000HS03: MANAGEMENT SCIENCE

Course Objectives:

This course is intended to familiarize the students with the framework for the managers and leaders available for understanding and making decisions relating to issues in organizational structure, production operations, marketing, human resource management, product management and strategy.

Course Outcomes:

By the end of the course, the student will be in a position to

- Plann organizational structure for a given context in the organization
- Carry out production operations through Work study.
- Understand the markets, customers and competition better and price the given products appropriately.
- Ensure quality for a given product or service.
- Plan and control the HR function better.
- Plan, schedule and control projects through PERT and CPM.
- Evolve a strategy for a business or service organization.

UNIT - I:

Introduction to Management and Organization: Concepts of Management and organization-nature, importance and Functions of Management, Taylor's Scientific Management Theory- Fayol's Principles of Management- Maslow's theory of Hierarchy of Human Needs- Douglas McGregor's Theory X and Theory Y - Hertzberg Two Factor Theory of Motivation - Leadership Styles, Designing Organizational Structures: Basic concepts related to Organisation - Departmentation and Decentralization.

UNIT - II:

Operations and Marketing Management: Principles and Types of Plant Layout-Methods of Production(Job, batch and Mass Production), Work Study - Basic procedure involved in Method Study and Work Measurement - Statistical Quality Control: control charts for Variables and Attributes (simple Problems) and Acceptance Sampling, TQM, Six Sigma, Objectives of Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Store Records - JIT System, Supply Chain Management, Functions of Marketing, Marketing Mix, and Marketing Strategies based on Product Life Cycle, Channels of distribution.

UNIT - III:

Human Resources Management(HRM): Concepts of HRM, HRD and Personnel Management and Industrial Relations (PMIR), HRM vs PMIR, Basic functions of HR Manager: Manpower planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Performance Appraisal, Job Evaluation and Merit Rating - Performance Management System.

UNIT - IV:

Project Management (PERT/ CPM): Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, (simple problems).

UNIT - V:

Strategic Management and Contemporary Strategic Issues: Mission, Goals, Objectives, Policy, Strategy, Programmes, Environmental Scanning, Value Chain Analysis, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives. Bench Marking and Balanced Score Card as Contemporary Business Strategies.

TEXT BOOKS:

1. Stoner, Freeman, Gilbert, Management, 6th Ed, Pearson Education, New Delhi, 2004.
2. P. Vijay Kumar, N. Appa Rao and Ashnab, Chnalill, Cengage Learning India, 2012.

REFERENCE BOOKS:

1. Kotler Philip and Keller Kevin Lane: Marketing Management, Pearson, 2012.
2. Koontz and Weihrich: Essentials of Management, McGraw Hill, 2012.
3. Thomas N. Duening and John M. Ivancevich Management - Principles and Guidelines, Biztantra, 2012.
4. Kanishka Bedi, Production and Operations Management, Oxford Uiversity Press, 2012.
5. Samuel C. Certo: Modern Management, 2012.
6. Schermerhorn, Capling, Poole and Wiesner: Management, Wiley, 2012.
7. Parnell: Strategic Management, Cengage, 2012.
8. Lawrence R Jauch, R. Gupta and William F. Glueck: Business Policy and Strategic Management Science, McGraw Hill, 2012.

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year II Sem **L/T/P/C**

3/0/0/3

2002PC10: POWER ELECTRONICS

COURSE OBJECTIVES:

- To Design/develop suitable power converter for efficient control or conversion of power in drive applications
- To Design / develop suitable power converter for efficient transmission and utilization of power in power system applications.

COURSE OUTCOMES:

- After completion of this course the student is able to Choose the appropriate converter for various applications
- Design the power converters suitable for particular applications Develop the novel control methodologies for better performance

UNIT-I:

POWER SWITCHING DEVICES

Concept of power electronics, scope and applications, types of power converters; Power semiconductor switches and their V-I characteristics - Power Diodes, Power BJT, SCR, Power MOSFET, Power IGBT; Thyristor ratings and protection, methods of SCR commutation, UJT as a trigger source, gate drive circuits for BJT and MOSFETs, Two transistor analogy of SCR

UNIT-II:

AC-DC CONVERTERS (PHASE CONTROLLED RECTIFIERS)

Principles of single-phase fully-controlled converter with R, RL, and RLE load, Principles of single-phase half-controlled converter with RL and RLE load, Principles of three-phase fully-controlled converter operation with RLE load, Effect of load and source inductances, General idea of gating circuits, Single phase and Three phase dual converters

UNIT-III:

DC-DC CONVERTERS (CHOPPER/SMPS)

Introduction, elementary chopper with an active switch and diode, concepts of duty ratio, average inductor voltage, average capacitor current. Buck converter - Power circuit, analysis and waveforms at steady state, duty ratio control of output voltage. Boost converter - Power circuit, analysis and waveforms at steady state, relation between duty ratio and average output voltage. Buck-Boost converter - Power circuit, analysis and waveforms at steady state, relation between duty ratio and average output voltage- Morgan's chopper – Jones chopper

UNIT-IV:

AC-DC CONVERTERS (INVERTERS)

Introduction, principle of operation, performance parameters, single phase bridge inverters with R, RL loads, 3-phase bridge inverters - 120 and 180 degrees mode of operation, Voltage control of single phase inverters –single pulse width modulation, multiple pulse width modulation, sinusoidal pulse width modulation-current source inverter

UNIT-V:

AC-AC CONVERTERS

Phase Controller (AC Voltage Regulator)-Introduction, Single phase two SCR's in anti-parallel with R and RL loads , modes of operation of Triac – Triac with R and RL loads – Derivation of RMS load voltage, current and power factor- wave forms-Cyclo-converter-Principle of operation of single phase cyclo-converters, relevant waveforms, circulating current mode of operation, Advantages and disadvantages.

TEXT BOOKS:

1. M. D. Singh & K. B. Kanchandhani, "Power Electronics", Tata Mc Graw – Hill Publishing Company, 1998.
2. "M. H. Rashid", "Power Electronics: Circuits, Devices and Applications", Prentice Hall of India, 2nd edition, 1998 3. "V. R. Murthy", "Power Electronics", Oxford University Press, 1st Edition 2005.

REFERENCE BOOKS:

1. VedamSubramanyam, "Power Electronics", New Age International (P) Limited, Publishers, 2nd Edition 2008.
2. Philip T. Krein, "Elements of Power Electronics", Oxford University Press, 1997.
3. M. S. Jamil Asghar, "Power Electronics", PHI Private Limited, 2004.
4. P. C. Sen, "Power Electronics", Tata Mc Graw-Hill Publishing, 2001.
5. John G. Kassakian, Martin, F. Schlect, Geroge C. Verghese, "Principles of Power Electronics", Pearson Education, 1st Edition 201

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year II Sem **L/T/P/C**

3/0/0/3

2002PC11: POWER SYSTEMS - II

Course Objectives:

- To compute inductance and capacitance of different transmission lines.
- To understand performance of short, medium and long transmission lines.
- To examine the traveling wave performance and sag of transmission lines.
- To design insulators for over head lines and understand cables for power transmission.

Course Outcomes:

After this course, the student will be able to

- Able to compute inductance and capacitance for different configurations of transmission lines.
- Able to analyze the performance of transmission lines
- Can understand transient's phenomenon of transmission lines and insulation coordination.
- Able to calculate sag and tension calculations.
- Will be able to understand overhead line insulators and underground cables.

UNIT- I:

Performance of Lines

Representation of lines, short transmission lines, medium length lines, nominal T and PIrepresentations, long transmission lines. The equivalent circuit representation of a long Line, A,B, C, D constants, Ferranti Effect, Power flow through a transmission line, receiving end power circle diagram.

UNIT- II:

Voltage Control

Introduction – methods of voltage control, shunt and series capacitors / Inductors, tap changing transformers, synchronous phase modifiers. Compensation In Power Systems Introduction - Concepts of Load compensation – Load ability characteristics of overhead lines –Uncompensated transmission line – Symmetrical line – Radial line with asynchronous load –Compensation of lines.

UNIT- III:

Per Unit Representation of Power Systems The one-line diagram, impedance and reactance diagrams, per unit quantities, changing the base of per unit quantities, advantages of per unit system. Travelling Waves on Transmission Lines Production of travelling waves, open circuited line, short circuited line, line terminated through a resistance, line connected to a cable, reflection and refraction at T-junction line terminated through a capacitance, capacitor connection at a T-junction, Attenuation of travelling waves.

UNIT- IV:

Overvoltage Protection and Insulation Coordination Over voltage due to arcing ground and Peterson coil, lightning, horn gaps, surge diverters, rod gaps, expulsion type lightning arrester, valve type lightning arrester, ground wires, ground rods, counter poise, surge absorbers, insulation coordination, volt-time curves.

UNIT - V:

SYMMETRICAL COMPONENTS AND FAULT CALCULATIONS

Significance of positive, negative and zero sequence components, Average 3-phase power in terms of symmetrical components, sequence impedances and sequence networks, fault calculations, sequence network equations, single line to ground fault, line to line fault, double line to ground fault, three phase fault, faults on power systems, faults with fault impedance, reactors and their location, short circuit capacity of a bus.

TEXT BOOKS:

1. John J. Grainger & W.D. Stevenson: Power System Analysis – Mc Graw Hill International 1994.
2. C.L. Wadhwa: Electrical Power Systems – New Age International Pub. Co. Third Edition, 2001.

REFERENCES:

1. Hadi Scadat: Power System Analysis – Tata Mc Graw Hill Pub. Co. 2002
2. W.D. Stevenson: Elements of Power system Analysis – McGraw Hill International Student Edition.
3. D.P. Kothari and I. J. Nagrath, Modern Power System Analysis - Tata Mc Graw Hill Pub. Co., New Delhi, Fourth edition, 2011

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year II Sem **L/T/P/C**

0/0/3/1.5

2002PC67: POWER ELECTRONICS & SIMULATION LAB

COURSE OBJECTIVES:

- Apply the concepts of power electronic converters for efficient conversion/control of power from source to load.
- Design the power converter with suitable switches meeting a specific load requirement.

COURSE OUTCOMES:

After completion of this course, the student is able to

- Understand the operating principles of various power electronic converters.
- Use power electronic simulation packages& hardware to develop the power converters.
- Analyze and choose the appropriate converters for various applications

LIST OF EXPERIMENTS

1. Study of Characteristics of SCR, MOSFET & IGBT
2. Gate firing circuits for SCR's
3. Single Phase AC Voltage Controller with R and RL Loads
4. Single Phase half controlled bridge converter with R and RL loads
5. Forced Commutation circuits (Class A, Class B, Class C, Class D & Class E)
6. Single Phase Cyclo converter with R and RL loads
7. Single Phase series inverter with R and RL loads
8. DC Jones chopper with R and RL Loads
9. Three Phase half controlled bridge converter with R-load
10. Single Phase dual converter with RL loads
11. Single Phase parallel inverter with R and RL loads
12. Simulation of single-phase full converter using R, RL and RLE loads
13. Simulation of single-phase Semi converter using R, RL and RLE loads
14. Simulation of Single-phase AC voltage controller using R and RL loads
15. Simulation of Three Phase Inverter with PWM Control.

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year II Sem **L/T/P/C**

0/0/3/1.5

2002PC68: POWER SYSTEMS LAB

COURSE OBJECTIVES:

1).Perform testing of CT, PT's and Insulator strings
2). To find sequence impedances of 3-Φ synchronous machine and Transformer
3). To perform fault analysis on Transmission line models and Generators.

COURSE OUTCOMES:

1) Perform various load flow techniques
2) Understand Different protection methods
3) Analyze the experimental data and draw the conclusions.

LIST OF EXPERIMENTS

1. Characteristics of IDMT over Current Relay.
2. Differential protection of 1-Φ transformer.
3. Characteristics of Micro Processor based Over Voltage/Under Voltage relay.
4. Testing of CT, PT's and Insulator strings.
5. Finding the sequence impedances of 3-Φ synchronous machine.
6. Finding the sequence impedances of 3-Φ Transformer.
7. LG, LL and 3-Φ fault analysis of 3-Φ synchronous machine.
8. Power circle diagrams of a 3-Φ transmission line model.
9. ABCD constants and Regulation of a 3-Φ transmission line model.
10. Simualation of Transient Stability Analysis for Single Machine connected to Infinite Bus by Point by Point method .
11. Simualation of Formation of Y_{BUS}
12. Simualation of Load Flow Analysis using Gauss Seidal (GS) Method.
13. Simualation of Load Flow Analysis using Fast Decoupled (FD) Method
14. Simualation of Formation of Z_{BUS}

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year II Se **L/T/P/C**

2/0/0/0

2000MC05: TECHNICAL COMMUNICATION & SOFT SKILLS

INTRODUCTION:

Technical Communication and Soft skills focuses on enhancing students' communication. A thorough drill in grammar exercises is given. Various technical writing styles and skills are developed. The future placement needs of the students are met by giving them an exposure to group discussions and mockinterviews.The students hone these skills under the guidance of instructor whose constant evaluation helps in the professional development. This course fulfills the need of the aspirants in acquiring and improving the skills required for placements and professional success.

OBJECTIVES:

- To make the students recognize the role of Technical English in their academic and professionalfields.
- To improve language proficiency and develop the required professionalskills.
- To equip students with tools to organize, comprehend, draft short and long forms of technicalwork.

The textbook prescribed for study is a manual that has been compiled by the epartment of English to meet the academic and professional needs of the students.

UNIT I – Personal Evaluation

Self-Assessment and Self- Awareness - Self-Esteem - Perception and Attitudes - Values and Beliefs - Time Management- Concord

UNIT 2 - Professional Communication

Extempore - Oral Presentations – Presentation Aids- Email Writing, Business Letter Writing - Memo Writing - Transformation of Sentences

UNIT 3 – Career Planning

Group Discussion, Interviews - Leadership Skills & Team Building - Personal Goal Setting and Career Planning - Complex Problem Solving - Creativity - Role and Responsibilities of an Engineer - Tenses

UNIT 4 - Technical Writing

Principles of Effective Writing - Editing Strategies to Achieve Appropriate Technical Style – Technical Report Writing - Voice

UNIT 5 - Ethics and Responsibilities

Personality Development in Social and Office Settings – Netiquettes - Work Culture and Cubicle Etiquettes - Correction of Sentences

REFERENCES:

1. David F. Beer and David Mc Murrey, Guide to writing as an Engineer, John Willey. New York,2004
2. Diane Hacker, Pocket Style Manual, Bedford Publication, New York, 2003. (ISBN 0312406843)
3. Shiv Khera, You Can Win, Macmillan Books, New York,2003.
4. Raman Sharma, Technical Communications, Oxford Publication, London,2004.
5. Meenakshi Raman, Prakash Singh, Business communication, Oxford Publication, New Delhi2012.
6. Dale Jung k, Applied Writing for Technicians, McGraw Hill, New York, 2004. (ISBN: 07828357-4)
7. Sharma, R. and Mohan, K. Business Correspondence and Report Writing, TMH New Delhi2002.
8. Xebec, Presentation Book, TMH New Delhi, 2000. (ISBN0402213)

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year II Sem **L/T/P/C**

3/0/0/3

PROFESSIONAL ELECTIVE - II

2002PE04: POWER SYSTEM PROTECTION

Course Objectives:

1. To introduce all kinds of circuit breakers and relays for protection of Generators
2. Transformers and feeder bus bars from Over voltages and other hazards.
3. To describe neutral grounding for overall protection.
4. To understand the phenomenon of Over Voltages and it's classification.

Course Outcomes: After Completion of this course student will be able to

1. Understand the types of Circuit breakers and choice of Relays for appropriate
2. Protection of power system equipment.
3. Understand various types of Protective devices in Electrical Power Systems.
4. Interpret the existing transmission voltage levels and various means to protect the
5. System against over voltages.
6. Understand the importance of Neutral Grounding, Effects of Ungrounded Neutral
7. Grounding on system performance, Methods and Practice

UNIT - I

Protective Relays

Introduction, Need for power system protection, effects of faults, evolution of protective relays, zones of protection, primary and backup protection, essential qualities of protection, classification of protective relays and schemes, current transformers, potential transformers, basic relay terminology. Operating Principles and Relay Construction: Electromagnetic relays, thermal relays, static relays, microprocessor based protective relays.

UNIT - II

Over-Current Protection

Time-current characteristics, current setting, over current protective schemes, directional relay, protection of parallel feeders, protection of ring mains, Phase fault and earth fault protection, Combined earth fault and phase fault protective scheme, Directional earth fault relay.

Distance Protection: Impedance relay, reactance relay, MHO relay, input quantities for various types of distance relays, Effect of arc resistance, Effect of power swings, effect of line length and source impedance on the performance of distance relays, selection of distance relays, MHO relay with blinders, Reduction of measuring units, switched distance schemes, auto re-closing.

UNIT- III

Pilot Relaying Schemes - Wire Pilot protection, Carrier current protection. AC Machines and Bus Zone Protection: Protection of Generators, Protection of transformers, Buszone protection, frame leakage protection.

UNIT - IV:

Static Relays

Amplitude and Phase comparators, Duality between AC and PC, Static amplitude comparator, integrating and instantaneous comparators, static phase comparators, coincidence type of phase comparator, static over current relays, static directional relay, static differential relay, static distance relays, Multi input comparators, concept of Quadrilateral and Elliptical relay characteristics. Microprocessor Based Relays: Advantages, over current relays, directional relays, distance relays.

UNTI-V:

Circuit Breakers

Introduction, arcing in circuit breakers, arc interruption theories, re-striking and recovery voltage, resistance switching, current chopping, interruption of capacitive current, oil circuit breaker, air blast circuit breakers, SF6 circuit breaker, operating mechanism, selection of circuit breakers, high voltage d.c. breakers, ratings of circuit breakers, testing of circuit breakers.

FUSES: Introduction, fuse characteristics, types of fuses, application of HRC fuses, discrimination.

TEXT BOOKS:

1. "Badri Ram , D. N Viswakarma", "Power System Protection and Switchgear", TMH Publications, 2011.
2. "Sunil S Rao", "Switchgear and Protection", Khanna Publishers, 2008.

REFERENCE BOOKS:

1. "Paithankar and S. R. Bhide", "Fundamentals of Power System Protection", PHI,2003.
2. "C R Mason", Art & Science of Protective Relaying – Wiley Eastern Ltd, 1966.
3. "C. L. Wadhwa", "Electrical Power Systems", New Age international (P) Limited, Publishers, 6th Edition 2007

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year II Sem **L/T/P/C**

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PROFESSIONAL ELECTIVE - II

2002PE05: ELECTRICAL & HYBRID VEHICLES

Course Objectives:

- To study the concepts and drive train configurations of electric drive vehicles
- To provide different electric propulsion systems and energy storage devices
- To explain the technology, design methodologies and control strategy of hybrid electric vehicles
- To emphasize battery charger topologies for plug in hybrid electric vehicles

Course Outcomes: Upon the completion of this course, the student will be able to

- Understand the concepts and drivetrain configurations of electric drive vehicles
- Interpret different electric propulsion systems and energy storage devices
- Appreciate the technology, design methodologies and control strategy of hybrid electric vehicles
- Realize battery charger topologies for plug in hybrid electric vehicles

UNIT – I :

Introduction to Electric Vehicles:Sustainable Transportation – EV System – EV Advantages – Vehicle Mechanics – Performance of EVs – Electric Vehicle drivetrain – EV Transmission Configurations and components-Tractive Effort in Normal Driving – Energy Consumption – EV Market – Types of Electric Vehicle in Use Today – Electric Vehicles for the Future.

UNIT – II :

Electric Vehicle Modelling– Consideration of Rolling Resistance – Transmission Efficiency – Consideration of Vehicle Mass – Tractive Effort – Modelling Vehicle Acceleration – Modelling Electric Vehicle Range -Aerodynamic Considerations – Ideal Gearbox Steady State Model – EV Motor Sizing – General Issues in Design.

UNIT – III :

Introduction to electric vehicle batteries –electric vehicle battery efficiency – electric vehicle battery capacity – electric vehicle battery charging – electric vehicle battery fast charging – electric vehicle battery discharging – electric vehicle battery performance – testing.

UNIT – IV :

Hybrid Electric Vehicles –HEV Fundamentals -Architectures of HEVs- Interdisciplinary Nature of HEVs – State of the Art of HEVs – Advantages and Disadvantages – Challenges and Key Technology

of HEVs – Concept of Hybridization of the Automobile-Plug-in Hybrid Electric Vehicles – Design and Control Principles of Plug-In Hybrid Electric Vehicles – Fuel Cell Hybrid Electric Drive Train Design – HEV Applications for Military Vehicles.

UNIT – V :

Advanced topics –Battery Charger Topologies, Charging Power Levels, and Infrastructure for PlugIn Electric and Hybrid Vehicles – The Impact of Plug-in Hybrid Electric Vehicles on Distribution Networks – Sizing Ultra capacitors for Hybrid Electric Vehicles.

TEXT BOOKS:

- Modern Electric, Hybrid Electric and Fuel Cell Vehicles – Fundamentals, Theory and Design – Mehrdad Ehsani, Uimin Gao and Ali Emadi – Second Edition – CRC Press, 2010.
- Electric Vehicle Technology Explained – James Larminie, John Lowry – John Wiley & Sons Ltd, – 2003.
- Electric Vehicle Battery Systems – Sandeep Dhameja – Newnes – New Delhi – 2002.
- Hybrid electric Vehicles Principles and applications With practical perspectives -Chris Mi, Dearborn – M. Abul Masrur, David Wenzhong Gao – A John Wiley & Sons, Ltd., – 2011.
- Electric & Hybrid Vehicles – Design Fundamentals – Iqbal Hussain, Second Edition, CRC Press, 2011.

RESEARCH PAPERS:

- The Impact of Plug-in Hybrid Electric Vehicles on Distribution Networks: a Review and Outlook – Robert C. Green II, Lingfeng Wang and Mansoor Alam – 2010 IEEE.
- Sizing Ultracapacitors for Hybrid Electric Vehicles – H. Douglas P Pillay -2005 IEEE.
- Review of Battery Charger Topologies, Charging Power Levels, and Infrastructure for Plug-In Electric and Hybrid Vehicles – Murat Yilmaz, and Philip T. Krein, – IEEE transactions on power electronics, vol. 28, no. 5, May 2013.

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B.Tech III Year II Sem **L/T/P/C**

3/0/0/3

PROFESSIONAL ELECTIVE - II

2002PE06: ELECTRICAL ESTIMATION & COSTING

Course Objectives:

- To emphasize the estimation and costing aspects of all electrical equipment, installation and designs on the cost viability.
- To design and estimation of wiring
- To design overhead and underground distribution lines, substations and illumination

Course Outcomes:

After Completion of this course, student will be able to

- Understand the design considerations of electrical installations.
- Design electrical installation for buildings and small industries.
- Identify and design the various types of light sources for different applications.

UNIT-1

GENERAL PRINCIPLES OF ESTIMATION

Introduction to estimation & costing, Electrical Schedule, Catalogues, Market Survey and source selection, Recording of estimates, Determination of required quantity of material, Labor conditions, Determination of cost material and labour, Contingencies, Overhead charges, Profit, Purchase system, Purchase enquiry and selection of appropriate purchase mode, Comparative statement, Purchase orders, Payment of bills, Tender form, General idea about IE rule, Indian Electricity Act and major applicable rules.

UNIT-2

RESIDENTIAL BUILDING ELECTRIFICATION

General rules guidelines for wiring of residential installation and positioning of equipments, Principles of circuit design in lighting and power circuits, Procedures for designing the circuits and deciding the number of circuits, Method of drawing single line diagram, Selection of type of wiring and rating of wires and cables, Load calculations and selection of size of conductor, Selection of rating of main switch, distribution board, protective switchgear ELCB and MCB and wiring accessories, Earthing of residential Installation, Sequence to be followed for preparing estimate, Preparation of detailed estimates and costing of residential installation.

UNIT-3

DESIGN AND ESTIMATION OF OVERHEAD TRANSMISSION & DISTRIBUTION LINES

Introduction, Typical AC electrical power system, Main components of overhead lines, Line supports, Factors governing height of pole, Conductor materials, Determination of size of conductor for overhead transmission line, Cross arms, Pole brackets and clamps, Guys and Stays, Conductors configuration spacing and clearances, Span lengths, Overhead line insulators, Insulator materials, Types of insulators, Lightning Arrestors, Phase plates, Danger plates, Anti climbing devices, Bird guards, Beads of jumpers, Muffs, Points to be considered at the time of erection of overhead lines, Erection of supports, Setting of stays, Fixing of cross arms, Fixing of insulators, Conductor erection, Repairing and jointing of conductor , Dead end clamps, Positioning of conductors and attachment to insulators, Jumpers, Tee-offs, Earthing of transmission lines, Guarding of overhead lines, Clearances of conductor from ground, Spacing between conductors, Testing and commissioning of overhead distribution lines, Some important specifications.

UNIT-4

ELECTRIFICATION OF COMMERCIAL INSTALLATION

Concept of commercial installation,Differentiate between electrification of residential and commercial installation, Fundamental considerations for planning of an electrical installation system for commercial building, Design considerations of electrical installation system for commercial building, Load calculation and selection of size of service connection and nature of supply, Deciding the size of the cables,busbar and bus bar chambers, Mounting arrangements and positioning of switchboards, distribution boards main switch etc, Earthing of the electrical installation, Selection of type wire, wiring system and layout, Sequence to be followed to prepare estimate, Preparation of detailed estimate and costing of commercial installation

UNIT-5

DESIGN AND ESTIMATION OF SUBSTATIONS

Introduction, Classification of substation, Indoor substations, Outdoor substations, Selection and location of site for substation, Main Electrical Connections, Graphical symbols for various types of apparatus and circuit elements on substation main connection diagram, Key diagram of typical substations, Equipment for substation and switchgear installations, Substation auxiliaries supply, Substation Earthing

ELECTRICAL INSTALLATION FOR POWER CIRCUITS

Introduction, Important considerations regarding motor installation wiring, Determination of input power, Determination of input current to motors, Determination of rating of cables, determination of rating of fuse, Determination of size of Condit, distribution Board main switch and starter.

Text Books:

- "K. B. Raina, S. K. Bhattacharya", "Electrical Design Estimating and Costing", New Age International Publisher, 2010.
- "Er. V. K. Jain, Er. Amitabh Bajaj", "Design of Electrical Installations", University Science Press.

Reference Books:

- Code of practice for Electrical wiring installations,(System voltage not exceeding 650 volts), Indian Standard Institution, IS: 732-1983.
- Guide for Electrical layout in residential buildings, Indian Standard Institution, IS: 4648-1968.
- Electrical Installation buildings Indian Standard Institution, IS: 2032.
- Code of Practice for selection, Installation of Maintenance of fuse (voltage not exceeding 650 V), Indian Standard Institution, IS: 3106-1966.
- Code of Practice for earthling, Indian Standard Institution, IS: 3043-1966.
- Code of Practice for Installation and Maintenance of induction motors, Indian Standard Institution, IS: 900-1965.
- Code of Practice for electrical wiring, Installations (system voltage not exceeding 650 Volts), Indian Standard Institution, IS: 2274-1963.
- "Gupta J. B., Katson, Ludhiana", "Electrical Installation, estimating and costing", S. K. Kataria and sons, 2013.

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B.Tech III Year II Sem **L/T/P/C**

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PROFESSIONAL ELECTIVE - III

2002PE07: DIGITAL SIGNAL PROCESSING

Course Objectives:

This course is an essential course that provides design techniques for processing all type of signals in various fields. The main objectives are:

- To provide background and fundamental material for the analysis and processing of digital signals.
- To familiarize the relationships between continuous-time and discrete time signals and systems.
- To study fundamentals of time, frequency and Z-plane analysis and to discuss the inter-relationships of these analytic method.
- To study the designs and structures of digital (IIR and FIR) filters from analysis to synthesis for a given specifications.
- The impetus is to introduce a few real-world signal processing applications.
- To acquaint in FFT algorithms, Multi-rate signal processing techniques and finite word length effects.

Course Outcomes: On completion of this subject, the student should be able to:

- Perform time, frequency, and Z -transform analysis on signals and systems.
- Understand the inter-relationship between DFT and various transforms.
- Understand the significance of various filter structures and effects of round off errors.
- Design a digital filter for a given specification.
- Understand the fast computation of DFT and appreciate the FFT processing.
- Understand the tradeoffs between normal and multi rate DSP techniques and finite length word effects.

UNIT - I

Introduction: Introduction to Digital Signal Processing: Discrete Time Signals & Sequences, conversion of continuous to discrete signal, Normalized Frequency**,** Linear Shift Invariant Systems, Stability, and Causality, linear differential equation to difference equation**,** Linear Constant Coefficient Difference Equations, Frequency Domain Representation of Discrete Time Signals and Systems

Realization of Digital Filters: Applications of Z – Transforms, Solution of Difference Equations of Digital Filters, System Function, Stability Criterion, Frequency Response of Stable Systems, Realization of Digital Filters – Direct, Canonic, Cascade and Parallel Forms.

UNIT - II

Discrete Fourier Transforms: Properties of DFT, Linear Convolution of Sequences using DFT, Computation of DFT: Over-Lap Add Method, Over-Lap Save Method, Relation between DTFT, DFS, DFT and Z-Transform.

Fast Fourier Transforms: Fast Fourier Transforms (FFT) - Radix-2 Decimation-in-Time and Decimation-in-Frequency FFT Algorithms, Inverse FFT, and FFT with General Radix-N.

UNIT - III

IIR Digital Filters: Analog filter approximations – Butterworth and Chebyshev, Design of IIR Digital Filters from Analog Filters, Step and Impulse Invariant Techniques, Bilinear Transformation Method, Spectral Transformations.

UNIT - IV

FIR Digital Filters: Characteristics of FIR Digital Filters, Frequency Response, Design of FIR Filters: Fourier Method, Digital Filters using Window Techniques, Frequency Sampling Technique, Comparison of IIR & FIR filters.

UNIT - V

Multirate Digital Signal Processing: Introduction, Down Sampling, Decimation, Upsampling, Interpolation, Sampling Rate Conversion, Conversion of Band Pass Signals, Concept of Resampling, Applications of Multi Rate Signal Processing.

Finite Word Length Effects: Limit cycles, Overflow Oscillations, Round-off Noise in IIR Digital Filters, Computational Output Round off Noise, Methods to Prevent Overflow, Trade off between Round Off and Overflow Noise, Measurement of Coefficient Quantization Effects through Pole-Zero Movement, Dead Band Effects.

TEXT BOOKS:

1. Digital Signal Processing, Principles, Algorithms, and Applications: John G. Proakis, Dimitris
2. G. Manolakis, Pearson Education / PHI, 2007.
3. Discrete Time Signal Processing – A. V. Oppenheim and R.W. Schaffer, PHI, 2009
4. Fundamentals of Digital Signal Processing – Loney Ludeman, John Wiley, 2009

REFERENCES:

1. Digital Signal Processing – Fundamentals and Applications – Li Tan, Elsevier, 2008
2. Fundamentals of Digital Signal Processing using MATLAB – Robert J. Schilling, Sandra L. Harris, Thomson, 2007
3. Digital Signal Processing - A Practical approach, Emmanuel C. Ifeachor and Barrie W. Jervis, 2nd Edition, Pearson Education, 2009

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech III Year II Sem **L/T/P/C**

3/0/0/3

PROFESSIONAL ELECTIVE - III

2002PE08: POWER SYSTEM OPERATION & CONTROL

Course Objectives:

To understand real power control and operation To know the importance of frequency control
To analyze different methods to control reactive power
To understand unit commitment problem and importance of economic load dispatch
To understand real time control of power systems

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

Analyze the optimal scheduling of power plants

Analyze the steady state behavior of the power system for voltage and frequency fluctuations

Describe reactive power control of a power system

Design suitable controller to dampen the frequency and voltage steady state oscillations

UNIT – I

Load –Frequency Control: Basics of speed governing mechanism and modeling - speed-load characteristics – load sharing between two synchronous machines in parallel. Control area concept LFC control of a single-area system. Static and dynamic analysis of uncontrolled and controlled cases. Integration of economic dispatch control with LFC. Two-area system – modeling - static analysis of uncontrolled case - tie line with frequency bias control of two-area system - state variable model.

UNIT – II

Reactive Power – Voltage Control: Basics of reactive power control. Excitation systems – modeling. Static and dynamic analysis - stability compensation - generation and absorption of reactive power. Relation between voltage, power and reactive power at a node - method of voltage control - tap-changing transformer. System level control using generator voltage magnitude setting, tap setting of OLTC transformer and MVAR injection of switched capacitors to maintain acceptable voltage profile and to minimize transmission loss.

UNIT – III

Economic Load Dispatch: Statement of economic dispatch problem – cost of generation – incremental cost curve - co-ordination equations without loss and with loss, solution by direct method and λ-iteration method.

UNIT – IV

Unit Commitment: Statement of Unit Commitment problem – constraints; spinning reserve, thermal unit constraints, hydro constraints, fuel constraints and other constraints. Solution methods - Priority-list methods - forward dynamic programming approach. Numerical problems on priority-list method using full-load average production cost and Forward DP method.

UNIT – V

Computer Control of Power Systems: Need of computer control of power systems. Concept of energy control centre (or) load dispatch centre and the functions - system monitoring - data acquisition and control. System hardware configuration – SCADA and EMS functions. Network topology – Importance of Load Forecasting and simple techniques of forecasting.

Text Books:

1. D. P. Kothari and I. J. Nagrath, 'Modern Power System Analysis', Third Edition, Tata McGraw Hill Publishing Company Limited, New Delhi, 2003.

2. Olle. I. Elgerd, 'Electric Energy Systems Theory – An Introduction', Tata McGraw Hill Publishing Company Ltd, New Delhi, 30th reprint, 2007.

Reference Books:

1. Chakrabarti & Haldar, "Power System Analysis: Operation and Control", Prentice Hall of India, 2004 Edition.

2. C. L. Wadhwa , 'Power System Analysis', New Age International-6th Edition, 2010, ISBN : 978-81-224-2839-1

3. Robert Miller, James Malinowski, 'Power System Operation', Tata McGraw Hill Publishing Company Ltd, New Delhi, 3rd Edition 2009.

4. P. Kundur, Neal J. Balu, 'Power System Stability & Control', IEEE, 1998.

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PROFESSIONAL ELECTIVE - III

2002PE09: HIGH ENERGY STORAGE SYSTEMS

Course Objective:

- To enable the student to understand the need for energy storage, devices and technologies available and their applications

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

- Analyze the characteristics of energy from various sources and need for storage classify various types of energy storage and various devices used for the purpose Identify various real time applications.

UNIT - I

Electrical Energy Storage Technologies: Characteristics of electricity, Electricity and the roles of EES, High generation cost during peak-demand periods, Need for continuous and flexible supply, Long distance between generation and consumption, Congestion in power grids, Transmission by cable.

UNIT - II

Needs for Electrical Energy Storage: Emerging needs for EES, More renewable energy, less fossil fuel, Smart Grid uses, The roles of electrical energy storage technologies, The roles from the viewpoint of a utility, The roles from the viewpoint of consumers, The roles from the viewpoint of generators of renewable energy.

UNIT - III

Features of Energy Storage Systems: Classification of EES systems , Mechanical storage systems, Pumped hydro storage (PHS), Compressed air energy storage (CAES), Flywheel energy storage (FES),Electrochemical storage systems, Secondary batteries, Flow batteries, Chemical energy storage, Hydrogen (H2),Synthetic natural gas (SNG).

UNIT - IV

Types of Electrical Energy Storage systems: Electrical storage systems, Double-layer capacitors (DLC) ,Superconducting magnetic energy storage (SMES),Thermal storage systems ,Standards for EES, Technical comparison of EES technologies.

UNIT - V

Applications: Present status of applications, Utility use (conventional power generation, grid operation & service) , Consumer use (uninterruptable power supply for large consumers), New trends in applications ,Renewable energy generation, Smart Grid, Smart Micro grid, Smart House, Electric vehicles, Management and control hierarchy of storage systems, Internal configuration of battery storage systems, External connection of EES systems , Aggregating EES systems and distributed generation (Virtual Power Plant), Battery SCADA– aggregation of many dispersed batteries.

Text Books:

1. "James M. Eyer, Joseph J. Iannucci and Garth P. Corey ", "Energy Storage Benefits and Market Analysis", Sandia National Laboratories, 2004.
2. The Electrical Energy Storage by IEC Market Strategy Board.

Reference Book:

1. "Jim Eyer, Garth Corey", Energy Storage for the Electricity Grid: Benefits and Market Potential Assessment Guide, Report, Sandia National Laboratories, Feb 2010