Course Structure for B.Tech (Electrical & Electronics Engineering)

Regular Programme Applicable for students admitted from 2016-17 Academic Year

B.Tech 1st Semester – Electrical & Electronics Engineering

S.No	Code	Course	L	T	P	Drg	C
1	16HS1101	Professional English-I	3	0	0	0	3
2	16HS1102	Calculus and Differential Equations	3	1	0	0	3
3	16HS1104	Applied Chemistry	3	1	0	0	3
4	16ME1102	Basic Mechanical and Civil Engineering	3	1	0	0	3
5	16CS1101	Computer Programming	3	0	0	0	3
6	16HS2108	Applied Chemistry Lab	0	0	3	0	2
7	16CS2102	Computer Programming Lab	0	0	3	0	2
8	16ME2103	Engineering Drawing Practice	0	0	0	3	2
		TOTAL	**15**	**3**	**6**	**3**	**21**

B.Tech 2nd Semester – Electrical & Electronics Engineering

S.No	Code	Course	L	T	P	Drg	C
1	16HS1201	Professional English-II	3	0	0	0	3
2	16HS1202	Integral Transformations	3	1	0	0	3
3	16HS1103	Applied Physics	3	1	0	0	3
4	16HS1105	Environmental Studies	3	0	0	0	3
5	16EE1202	Circuit Theory	3	1	0	0	3
6	16HS2106	Professional English Lab	0	0	3	0	2
7	16HS2107	Applied Physics Lab	0	0	3	0	2
8	16ME2104	Engineering Workshop and IT Workshop	0	0	3	0	2
		TOTAL	**15**	**3**	**9**	**0**	**21**

B.Tech 3rd Semester – Electrical & Electronics Engineering

S.No	Code	Course	L	T	P	Oth	C
1	16HS1301	Complex Analysis	3	1	0	0	3
2	16EC1301	Electronic Devices and Circuits	3	1	0	0	3
3	16CS1305	Introduction to Data Structures	3	0	0	0	3
4	16EE1301	Electromagnetic Fields	3	1	0	0	3
5	16EE1302	Network Analysis	3	1	0	0	3
6	16EE1303	DC Machines	3	0	0	0	3
7	16EC2305	Electronic Devices and Circuits Lab	0	0	3	0	2
8	16EE2305	Electrical Circuits Lab	0	0	3	0	2
9	16EE2306	Electrical Workshop	0	0	3	0	2
10	16AS3301	Communication Skills Practice	0	0	0	3	1
11	16AS3302	Professional Society Activities-I	0	0	0	3	1
12		Audit Course					
		TOTAL	**18**	**4**	**9**	**6**	**26**

B.Tech 4th Semester – Electrical & Electronics Engineering

S.No	Code	Course	L	T	P	Oth	C
1	16HS1401	Matrices and Numerical Methods	3	1	0	0	3
2	16ME1302	Fluid Mechanics and Hydraulic Machinery	3	1	0	0	3
3	16EC1405	Digital Electronics	3	0	0	0	3
4	16EC1406	Analog Electronic Circuits	3	1	0	0	3
5	16EE1401	Transformers and Induction Motors	3	1	0	0	3
6	16EE1402	Generation of Electric Power	3	0	0	0	3
7	16ME2306	Fluid Mechanics and Hydraulic Machinery Lab	0	0	3	0	2
8	16EC2408	Pulse and Digital Circuits Lab	0	0	3	0	2
9	16EE2403	DC Machines Lab	0	0	3	0	2
10	16AS3401	Technical Seminar	0	0	0	3	1
11	16AS3402	Soft Skills Practice	0	0	0	3	1
12	16AS3403	Professional Society Activities-II	0	0	0	3	1
		TOTAL	**18**	**4**	**9**	**9**	**27**

B.Tech 5th Semester – Electrical & Electronics Engineering

S.No	Code	Course	L	T	P	Oth	C
1	16MB1411	Engineering Economics and Project Management	3	0	0	0	3
2	16EE1501	Transmission of Electric Power	3	1	0	0	3
3	16EE1502	Synchronous and Special Machines	3	1	0	0	3
4	16EE1503	Linear Control Systems	3	1	0	0	3
5	16EE1504	Power Electronics	3	0	0	0	3
6	16EE1505	Electrical Measurements and Instrumentation	3	1	0	0	3
7	16EE2506	AC Machines Lab	0	0	3	0	2
8	16EE2507	Control Systems Lab	0	0	3	0	2
9	16EE2508	Electrical Measurements and Instrumentation Lab	0	0	3	0	2
10	16AS3501	Term Paper	0	0	0	3	2
11	16AS3502	Quantitative Aptitude	0	0	0	3	1
12	16AS3503	Professional Society Activities-III	0	0	0	3	1
		TOTAL	**18**	**4**	**9**	**9**	**28**

B.Tech 6th Semester – Electrical & Electronics Engineering

S.No	Code	Course	L	T	P	Oth	C
1	16EC1604	Microprocessors and Microcontrollers	3	1	0	0	3
2	16EC1610	Linear and Digital IC Applications	3	1	0	0	3
3	16EE1601	Switch Gear and Protection	3	1	0	0	3
4	16EE1602	Power Semiconductor Drives	3	0	0	0	3
5	16EE1603	Utilization of Electrical Energy	3	0	0	0	3
6	**ELECTIVE-I**						
	16EE1604	High Voltage Engineering	3	1	0	0	3
	16EC1303	Signals and Systems					
	16CS1401	Database Management Systems					
	16EE1605	Available Selected MOOCs					
7	16EC2613	Microprocessors and Microcontrollers Lab	0	0	3	0	2
8	16EE2606	Power Electronics Lab	0	0	3	0	2
9	16EE2607	Electrical Systems Lab	0	0	3	0	2
10	16EE2608	Mini Project	0	0	0	3	2
11	16AS3601	Technical Aptitude	0	0	0	3	1
12	16AS3602	Professional Society Activities-IV	0	0	0	3	1
		TOTAL	**18**	**4**	**9**	**9**	**28**

B.Tech 7th Semester – Electrical & Electronics Engineering

S.No	Code	Course	L	T	P	Oth	C
1	16EC1605	Digital Signal Processing	3	0	0	0	3
2	16EE1701	Power System Analysis	3	1	0	0	3
3	16EE1702	Power System Operation and Control	3	1	0	0	3
4	**ELECTIVE-II (OPEN ELECTIVE)**		3	1	0	0	3
5	**ELECTIVE-III**						
	16EE1703	HVDC and FACTS	3	1	0	0	3
	16EE1704	Neural Networks and Fuzzy logic					
	16EE1705	PLCs and SCADA					
	16EE1706	Available Selected MOOCs					
6	16EC2614	Digital Signal Processing Lab	0	0	3	0	2
7	16EE2709	Power System Lab	0	0	3	0	2
8	16EE2710	Power Electronic Convertors and Drives Lab	0	0	3	0	2
9	16AS3701	Internship	0	0	0	3	2
10	16AS3702	Professional Society Activities-V	0	0	0	3	1
		TOTAL	**15**	**4**	**9**	**6**	**24**

B.Tech 8th Semester – Electrical & Electronics Engineering

S.No	Code	Course	L	T	P	Oth	C
1	**ELECTIVE-IV**						
	16EE1801	Electrical Distribution Systems	3	1	0	0	3
	16EE1802	Optimization Techniques					
	16CS1402	OOPs through JAVA					
	16EC1813	Embedded Systems					
2	**ELECTIVE-V**						
	16EE1803	Modern Control Theory	3	1	0	0	3
	16EE1804	Smart Grid					
	16EE1805	Power System Reliability					
	16EE1806	Available Selected MOOCs					
3	**ELECTIVE-VI**						
	16EE1807	Energy Auditing and Demand Side Management	3	1	0	0	3
	16EE1808	Principles of Power Quality					
	16EE1809	Design of Electrical Systems					
	16EE1810	Available Selected MOOCs					
4	16EE2811	Major Project and Comprehensive Viva-Voce	0	0	8	0	12
		TOTAL	**9**	**3**	**8**	**0**	**21**

ELECTIVE-II (OPEN ELECTIVE)

S.No	Code	Course
1	16CE1707	Disaster Management
2	16CE1708	Infrastructure Systems Planning
3	16EE1707	Renewable Energy Sources
4	16EE1708	Energy Auditing
5	16ME1708	Industrial Robotics
6	16ME1709	Nano Material Applications
7	16EC1707	Digital Image Processing (not for ECE)
8	16EC1708	Electronic Product Design and Packaging
9	16EC1709	Bio-Medical Instrumentation
10	16CS1708	Internet of Things
11	16CS1709	Open System Software
12	16MB1302	Entrepreneurship Development

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR
(AUTONOMOUS)

B.Tech 1st Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
	3	0	0	0	3

16HS1101 PROFESSIONAL ENGLISH-I

COURSE OUTCOMES:

At the end of the course students able to

1 Developed functional skills for Professional practice through English
2 Gained the ability to effectively communicate with members of society in general and engineering community in particular.
3 Inculcated an attitude to upgrade competence of English knowledge and communication.
4 Acquired fundamental and functional knowledge of English language, grammar and communication skills.
5 Identify and analyze productive skills and receptive skills.

UNIT-I

The Road Not Taken by **Robert Frost**
Communication: Importance of Communication – Language as a tool of Communication – Communicative Skills (Listening, Speaking, Reading and Writing), vocabulary words, prefixes, suffixes, common errors, Verbal and Non-Verbal communication.

UNIT-II

Well Party for Miss Pushpa T.S. by **Nissim Ezekiel**
Fare Writing: Effective Sentence construction strategies – Grammaticality, removing ambiguity in sentences.

UNIT-III

No Men are Foreign by **James Kirkup**
Reading: Reading – Intensive and Extensive, Skimming, Scanning, paragraph writing, unity of theme, coherence, pattern of paragraph development.

UNIT-IV

Exercises on Letter Writing and Technical Report Writing.
Remedial Grammar: Tenses**,** Use of Articles and Prepositions, Voice, Reported Speech.

TEXT BOOKS:

1 Text: Vibrant English 2014 Orient Black Swan
2 Meenakshi Raman and Sangeetha Sharma, Technical Communication, Oxford University Press, New Delhi, 2012.

REFERENCE BOOKS:

1 M. Ashraf Rizvi, Effective Technical Communication, Tata McGraw–Hill, Publishing Company Limited, First Edition, 2005.

2 Martin Hewings, Adv. English Grammar: A Self Study Reference and Practice Book for Advanced South Asian Students, Cambridge University press, First South Asian Edition, New Delhi, 1999.

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B.Tech 1st Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
	3	1	0	0	3

16HS1102 CALCULUS AND DIFFERENTIAL EQUATIONS

COURSE OUTCOMES:

At the end of the course students able to

1. Find the solutions for maxima and minima problems which appear in engineering problems.
2. Understand the concepts of curvature and use them in various engineering disciplines.
3. Evaluate areas and volumes using multiple integrals.
4. Gain the knowledge of vector differentiation and solve the problems of various engineering disciplines acquire the knowledge of differential equations.
5. Summarize and utilize them in various Engineering Problems.
6. Form and solve various PDEs.

UNIT-I

Functions of Several variables

Functions of two or more variables – Partial Derivatives – Total derivative – Jacobians – Taylor's theorem for functions of two variables (without proof) – Maxima and Minima of functions of two variables and Lagrange's method of undetermined multipliers

UNIT-II

Curvature and Multiple Integrals

Curvature – Radius of Curvature for Cartesian and Polar Curves - Radius of Curvature at the origin - Evaluation of Double Integrals – Change of Order of Integration - Change of Variables- Evaluation of Triple Integrals Areas and Volumes using multiple integrals.

UNIT-III

Differentiation of vectors – Gradient – Divergence – Curl – Line Integral - Gauss's Divergence Theorem, Green's theorem in a plane, Stoke's Theorem (without proofs).

UNIT-IV

Differential Equations (0DE & PDE)

Differential equations of first order-Exact, linear and Bernoulli equations- Orthogonal trajectories, Newton's cooling, law of growth and decay- Illustrations.

Differential equations of second and higher order- with RHS terms e^{ax}, Sin ax / Cos ax, x^n(n is +ve integer), $e^{ax}V$ [V is sin ax or cos ax or polynomial in x], x^nV [V is sin ax/ cos ax] - Variation of parameters - Applications to Oscillatory Electrical Circuits –Formation of PDEs by the elimination of arbitrary constants and arbitrary functions-Method of separation of variables.

TEXT BOOKS:

1 Higher Engineering Mathematics - Dr. B.S. Grewal – 42nd Edition - Khanna Publications.
2 A Text Book of Engineering Mathematics – I - T.K.V. Iyengar, B. Krishna Gandhi and Others - S. Chand & Company – Revised edition 2013.

REFERENCE BOOKS:

1 Advanced Engineering Mathematics – E. Kreyzig – 10th Edition – Wiley Publications.
2 A Text Book of Engineering Mathematics, B.V. Ramana - Tata McGraw Hill Publications
3 Advanced Engineering Mathematics – RK Jain & SRK Iyengar – Revised edition – Taylor & Francis – 2002.
4 E.Rukmangadachari & E. Keshava Reddy, Engineering Mathematics, Volume-I, 2nd Edition-Pearson publishers.

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B.Tech 1st Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
	3	1	0	0	3

16HS1104 APPLIED CHEMISTRY

COURSE OUTCOMES:

At the end of the course students able to

1 Apply the knowledge of working principle of batteries in engineering areas.
2 Apply the corrosion technology methods in various fields.
3 Implement various water purification methods in industries.
4 Describe the boiler troubles and estimations of hardness.
5 Know the application and manufacture of new polymers for industrial demand.
6 Know the knowledge of advanced polymer for different application.

UNIT-I

Electrochemistry and Corrosion Science

Conductance, Equivalent conductance, Molecular conductance, application of conductance, Conductometric Titration –acid vs. base, Electrochemical cell and its applications. Numerical calculation conductivity and electrochemical cell.

Batteries: Ni-Cad cell, Lithium Cells, Fuel Cells, Hydrogen – Oxygen fuel cell, Methanol Fuel cell.

Corrosion-definition, examples, effects- Mechanism of Dry corrosion and wet corrosion. Factor Influencing corrosion, corrosion control methods-sacrificial anode, impressed current, inhibitors, Electroplating (Ni &Cr) and Electro less plating (Cu and Ni).

UNIT-II

Water Technology-I: sources and impurities of water, water treatment for drinking purpose-disinfection and concept of break –point chlorination –Desalination of brakish water-Principle and process of electro-dialysis and reverse osmosis.

Water Technology-II: Boiler troubles –Scales, sludges, caustic embrittlement and boiler corrosion-causes, disadvantages and prevention, internal conditioning methods-phosphate, calgon and sodium aluminate-External treatment methods- ion-exchange methods. Estimation of Hardness, Dissolved oxygen, Alkalinity and chlorides.

UNIT-III

Polymer Technology: Polymerization-addition, condensation. Thermoplastics and thermosetting, preparation properties and application of Bakelite, Nylon, Teflon. Synthetic rubber, Buna S, Buna N, Poly-urethane, Thiokol rubbers. Conducting polymers-examples classification intrinsically conducting polymers and extrinsically conducting polymer, doping conducting polymers. Liquid Crystals-definition, properties and classification application. Natural rubber, Vulcanization, compounding of rubber. Inorganic polymer-Silicones.

UNIT-IV

Engineering Materials and Fuel Technology

Cement-types-Portland cement-composition, setting and hardening of Portland cement.

Lubricants: classification with examples, properties of lubricants –viscosity, flash point, fire point, cloud point, pour point.

Fuel Technology: Introduction, classification, solid fuel-Otto-Hoffmann's process, liquid fuel-Fischer-Tropsch Process. Calorific value, units of calorific value, Determination of calorific value of solid fuel by Bomb calorimeter. Numerical calculation for calculating of calorific values.

TEXT BOOKS:

1 Engineering Chemistry by Jain and Jain, DhanpatRai Publishing Company, New Delhi.
2 A text book of Engineering Chemistry by S.S.Dara, S. Chand and Company Limited, New Delhi.
3 Engineering Chemistry by K.N. Jayaveera, G.V.Subba Reddy, C. Ramachandraiah, McGraw Hill (Pvt), New Delhi.

REFERENCE BOOKS:

1 A text book of Engineering Chemistry by Shashi Chawla, Dhanpat Rai &Co (Pvt) Ltd, New Delhi.
2 Text book of Engineering Chemistry, C.Parameswara Murthy, C.V. Agarwal, Andra Naidu, B.S. Publications, Hyderabad.

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B.Tech 1st Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
	3	1	0	0	3

16ME1102 BASIC MECHANICAL AND CIVIL EMNGINEERING

PART-A

MECHANICAL ENGINEERING

COURSE OUTCOMES:

At the end of the course students able to

1. Develop capacity to predict the effect of force and motion in the course of carrying out the design functions of engineering
2. Apply knowledge of trigonometry, calculus, and algebra to obtain solutions of elementary problems in engineering mechanics.
3. Provide preliminary information useful in design of components in a multi-body system under constraints.
4. Train the students to apply fundamental knowledge of basic science for selection and processing of material for engineering applications.
5. Identify structures and properties of different materials.

UNIT-I

Basics of Engineering Mechanics: Basic Concepts of Engineering Mechanics: Characteristics of a force – various types of force systems – Resultant – Composition and resolution of forces –Principles of moments of force – Couples.

Resultants of Force System: Resultants of different types of force systems.

Centroid and Centers of Gravity: Definition – Centroid and centers of gravity simple bodies.

UNIT-II

Moments of Inertia: Definition – Parallel axis theorem for areas – Second moments of areas by integration – Radius of gyration of areas – Moments of inertia of simple areas.

Simple Stresses and Strains: Elasticity and plasticity – Types of stresses & strains – Hooke's law – stress & strain diagram for mild steel – Working stress – Factor of safety – Lateral strain, Poisson's ratio & volumetric strain – Elastic module & the relationship between them.

Composite Materials: Classification of composites, various methods of component manufacture of composites, particle – reinforced materials, fiber reinforced materials, polymer composites.

PART-B

CIVIL ENGINEERING

COURSE OUTCOMES:

At the end of the course students able to

1. Illustrate the fundamental aspects of Civil Engineering.
2. Explain the concepts of surveying for making horizontal and vertical measurements.
3. Illustrate the uses of various building materials and explain the method of construction of different components of a building.

4 Students will be able to discuss about various services in a building.

UNIT-III

General Introduction to Civil Engineering - Various disciplines of Civil engineering, Relevance of Civil engineering in the overall infrastructural development of the country. Introduction to types of buildings as per NBC; Selection of site for buildings. Components of a residential building and their functions. Introduction to industrial buildings – office / factory / software development office / power house /electronic equipment service centre (any one related to the branch of study).

Note: Students have to visit one such building and submit an assignment about the features of any one of the listed building related to their branch (Not included for exam).

Building materials - Bricks, cement blocks - Properties and specifications. Cement – OPC, properties, grades; other types of cement and its uses (in brief).Cement mortar – constituents, preparation. Concrete – PCC and RCC – grades. Steel - Use of steel in building construction, types and market forms.

UNIT-IV

Surveying - Principles and objectives of surveying; Horizontal measurements – instruments used – tape, types of tapes; Ranging (direct ranging only) – instruments used for ranging. Leveling - Definitions, principles, Instruments (brief discussion only) -Level field book - Reduction of levels - problems on leveling (height of collimation only).Modern surveying instruments – Electronic distance meter, digital level, total station, GPS (Brief discussion only).

TEXT BOOKS:

1 B. Bhattacharya, Engineering Mechanics- Oxford University Publications, 2009.
2 S.S. Bhavikatti, Engineering Mechanics, New Age Internationals, 2nd edition, 2010.
3 Introduction to Physical Metallurgy / Sidney H. Avener.
4 Essential of Materials science and engineering/ Donald R.Askeland/Thomson.
5 S.S. Bhavikatti, Basic Civil Engineering, New age international publishers.
6 Rangwala, Essentials of Civil Engineering, Charotar Publishing House.

REFERENCE BOOKS:

1 Material Science and Metallurgy/kodgire.
2 Science of Engineering Materials / Agarwal
3 A. K. Tayal, “Engineering Mechanics”, Umesh Publications, 2005.
4 Ferdinand.L.Singer, Engineering Mechanics (Statics and Dynamics), Harper Row Publishers.2007.
5 Anurag A. Kandya, Elements of Civil Engineering, Charotar Publishing house.
6 Rangwala S C and Ketki B Dalal, Engineering Materials, Charotar Publishing house.
7 Rangwala S C and Ketki B Dalal, Building Construction, Charotar Publishing house.
8 R. Chudley, Construction Technology, Vol. I to IV, Longman Group, England.

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B.Tech 1st Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
	3	0	0	0	3

16CS1101 COMPUTER PROGRAMMING

COURSE OUTCOMES:

At the end of the course students able to

1 Design algorithmic solution to problems.
2 Acquire knowledge about the basic concept of writing a program.
3 Understand the role of constants, variables, identifiers, operators, and type conversions of C Language
4 Ability to design programs Decision making and utilizing repetition.
5 Ability to design modular programs using functions.
6 Concept of Array and pointers dealing with memory management.

UNIT-I

Introduction to Computers and Programming:

Definition, Block diagram along with computer components, Characteristics & classification of computers, Types of programming languages.

Problem solving: top-down design, implementation of algorithms, Flow charts.

Introduction to C Language – History of C, features of C , General form of a C Program, character set in C, C-Tokens, Data types, Expression Evaluation, Operators and Expressions, Type Conversions, Formatted Input and Output

UNIT-II

Control Statements and Functions:

Decision Statements: If, if-else, nested if and switch Statements, Loop Control Statements - while, for, do-while Statements, Nested Loops, and Other Related Statements - break, continue, go to.

Functions: Function prototype, definition and accessing, passing arguments to a function, Library Functions, Scope of a function, Storage Classes - Auto, Register, Static, Extern, Scope rules, Type qualifiers, Recursion - Recursive functions, C Preprocessor, header files

UNIT-III

Arrays, Pointers and Strings:

Arrays: introduction, 1-Dimensional, 2-dimensional array, Declaration, Initialization and Accessing, Multidimensional Arrays.

Pointers: Introduction, Features of Pointers, Pointer Declaration, Arithmetic Operations with Pointers, Pointers and Arrays, Array of Pointers, Pointers to Pointers, Void Pointers, Memory Allocation Functions, Pointer to Functions, Command- Line Arguments.

Strings: String Basics, String Handling Functions

UNIT-IV

Structure and Union:

Structure and Union: Introduction, Features of structure, Declaration and Initialization of Structure, Structure within Structure, Array of Structures, Pointer to Structure, self referential Structures, Structures and Functions, type def and Enumerated data types, Unions, Bit fields.

Files: Introduction, Streams and file types, file operations

TEXT BOOKS:

1 Byron S Gottfried, Jitender Kumar Chabra, Programming with C, Third Edition, Mc Graw Hill Pvt. Ltd.

2 Jeri R Hanly, Elliot B. Koffman, Ashok Kamthane, A. Ananda Rao, Programming in C and data structures, Pearson Education.

REFERENCE BOOKS:

1 R. G. Dromey, How to Solve it by Computer, Person Education, 2008.

2 B. A. Forouzan and R.F. Gilberg, C Programming & Data Structures, Third Edition, Cengage Learning, 2000.

3 Stephen G. Kochan, Programming in C –III Edition, Pearson Educataion, 2004.

4 J.A. Jones & K. Harrow, C Programming with problem solving, Dream tech Press.

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B.Tech 1st Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
	0	0	3	0	2

16HS2108 APPLIED CHEMISTRY LAB

COURSE OUTCOMES:

At the end of the course students able to

1 Handle different glassware and apparatus and learn the skill in executing volumetric type experimental procedure.
2 Prepare some simple polymers.
3 Know the characteristics of lubricants and be able to modify lubricants according to purpose.
4 To take care of pollution control measures in industry.
5 To learn the desirable limits of various constituents in water analysis and its importance.

LIST OF EXPERIMENTS

S.No	**Name of the Experiment**
1	Estimation of dissolved oxygen in water samples.
2	Preparation of standard EDTA solution and estimation of hardness of water.
3	Corrosion of mild steel in acid and influence of an inhibiter thio urea.
4	Preparation of standard potassium dichromate solution and estimation of ferrous ion.
5	Determination of calorific value of solid fuel by using Bomb Calorimeter.
6	Determination of strength of given strong acid and strong base solution by conductometric titrations.
7	Estimation of chloride ion in water sample by Mohr's method.
8	Determination of viscosity of the oil through redwood viscometer
9	Determination of alkalinity of water.
10	Preparation of Phenol-Formaldehyde Resin (Bakelite).

TEXT BOOKS:

1 Quantitative Analysis by A.I. Vogel.
2 Engineering Chemistry Lab Manual by K.Gouru Naidu.
3 Laboratory Manual on Engineering Chemistry, S.K.Bhasin and Sudha Rani, 2nd Edition, Dhanpat Rai Publishing Company, New Delhi.

REFERENCE BOOKS:

1 Text Book of Engineering Chemistry by R.N. Goyal and Harrmendra Goel.
2 A text book on experiments and calculations-Engineering Chemistry. S.S. Dara.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

B.Tech 1st Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
	0	0	3	0	2

16CS2102 COMPUTER PROGRAMMING LAB

COURSE OUTCOMES:

At the end of the course students able to

1 Understand the basic concept of C Programming, and its different modules that include conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
2 Role of constants, variables, identifiers, operators, type conversion and other building blocks of C Language.
3 Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
4 Structures and unions through which derived data types can be formed
5 File Handling for permanent storage of data or record.

LIST OF EXPERIMENTS

Exercise-1
Programs on Expressions.
Exercise-2
Programs on decision control statements.
Exercise -3
Programs on loop statements.
Exercise -4
Programs to implement on functions.
Exercise -5
Programs to implement on parameter passing techniques.
Exercise -6
Programs using recursion.
Exercise-7
Programs using arrays.
Exercise -8
Programs to implement string handling functions.
Exercise -9
Programs to implement on pointers.
Exercise -10
Programs to implement on structures.
Exercise -11
Programs on files.
Exercise -12
Programs on command line arguments.

TEXT BOOKS:

1 Byron S Gottfried, Jitender Kumar Chabra, Programming with C, , Third Edition, McGraHill Pvt. Ltd
2 Jeri R Hanly, Elliot B. Koffman, Ashok Kamthane, A. Ananda Rao, Programming in C and data structures, Pearson Education

REFERENCE BOOKS:

1 R. G. Dromey, How to Solve it by Computer, Person Education,2008
2 B.A.Forouzan and R.F. Gilberg, C Programming & Data Structures, Third Edition, Cengage Learning,2000
3 Stephen G. Kochan,Programming in C –III Edition, Pearson Educataion,2004
4 J.A. Jones & K. Harrow ,C Programming with problem solving, Dreamtech Press
5 Harry H. Cheng,C for engineers and scientists an interpretive approach, , McGraHill International Pvt. Ltd
6 E.Balagurusamy, C Programming & Data Structures, TMH,2009

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B.Tech 1st Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
	0	0	3	0	2

16ME2103 ENGINEERING DRAWING PRACTICE

COURSE OUTCOMES:

At the end of the course students able to

1. Convey visual perception information regarding relative locations of objects through an orthographic/isometric view.
2. Analyze a drawing and bring out any inconsistencies to put forth inferences graphically.
3. Create feasible designs of simple objects with drawing tools and/or free-hand.
4. Get training in the transformation of the imagined data to present as drawings so that the communication skill will be increased especially in technical subjects.
5. Impart the training in multi-view representations and its conversion into pictorial views and the reverse also.
6. Understand the different standards in technical drawing and to help in reaching future engineering positions especially in research and design.

UNIT-I

Introduction to Engineering Drawing: Geometrical Constructions-Construction of Polygons.

Conic Sections

Ellipse: Eccentricity method, Oblong method, Parallelogram method, Arc's of Circles method and Concentric Circles method.

Parabola: Eccentricity method, Rectangle method, Tangent method, Parallelogram method.

Hyperbola: Eccentricity method, Rectangular hyperbola, Asymptotes method, two branches of Hyperbola (Arc's of Circles method), Abscissa- Ordinate- method.

Cycloids: General Cycloid, Epi -Cycloid, Hypo-Cycloid.

UNIT-II

Projections of Points, Straight Lines, Planes:

Points: Introduction to Orthographic Projections, Describing of quadrants, First and Third angle projection – Position of points in 4 quadrants.

Straight Lines: Lines parallel to both the principal planes, perpendicular to one plane and parallel to another plane, lines inclined to one plane, lines inclined to both the planes, finding true lengths, true inclinations.

Planes: Projection of regular plane surfaces, planes parallel to one plane, planes inclined to one plane and inclined to both the planes.

UNIT-III

Projection of Solids, Sections and Development of Solids with Auto -CAD

Solids: Positions of regular solids(prism, cylinder, pyramid and cone) – Projection of Solids – Axis perpendicular to one plane and parallel to another plane, inclined to one plane and inclined to both the planes, Axis parallel to both the Principal planes.

Section of Solids: Section Planes and Sectional views of Right Regular Solids–Prism, Cylinder, Pyramid and Cone. True shapes of the sections.

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

UNIT-IV

Isometric and Orthographic Projections with AUTO-CAD

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

Orthographic Projections – Conversion of pictorial views into orthographic views.

TEXT BOOKS:

1 N.D. Bhat, Engineering Drawing, Charotar Publishers, 52nd Revised and Enlarged: 2013.
2 K.L. Narayana, P. Khanniah, Engineering Drawing, Publisher, Scitech.

REFERENCE BOOKS:

1 Venugopal, K., A Textbook of Engineering Graphics, New age Publishers, 2009.
2 Venkata Reddy, Engineering Drawing, B.S.Publishers, 2009.
3 Basant Agrawal, C M Agrawal, Engineering Drawing, 2013.
4 V.Ramesh Babu, Engineering Drawing, 2009.

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3	0	0	0	3

16HS1201 PROFESSIONAL ENGLISH-II

COURSE OUTCOMES:

At the end of the course students able to

1 Use English language skills at basic level.
2 Recognize the personal enrichment to be gained from a love of English, literature and learning.
3 Acquired ability to interact politely and cooperate with others.
4 Identify and compare different kinds of Resume styles.
5 Design and develop functional skills in Professional contexts.

UNIT-I

Text: The Eyes are Not Here by Ruskin Bond.

Communication: Short oral presentation ,Group Discussion- definition, types, structure, practice, Dynamics of group, clarity in thought and expression, Dos and Don'ts of GD.

UNIT-II

Text: The Open Window by Saki.

Communication: Resume Writing, format of Cover Letter.

UNIT-III

Text: The Romance of a Busy Broker by O Henry.

Communication: Interview Skills, Types of Interviews, Pre Interview Techniques, Types of Questions and Answering Strategies.

UNIT-IV

Exercises on Common Errors in English, If- Clauses', One Word Substitutions, Idioms and Phrases, Words often Confused, Pre-fixes and Suffixes.

Text: Vibrant English 2014 Orient Black Swan.

REFERENCE BOOKS:

1 Meenakshi Raman and Sangeetha Sharma, Technical Communication, Oxford University Press, New Delhi, 2012.
2 M. Ashraf Rizvi, Effective Technical Communication, Tata Mc Graw–Hill, Publishing Company Limited, First Edition, 2005.
3 Practical English Usage by Michael Swan, 3rd Edition, OUP.
4 Intermediate English Grammar by Raymond Murphy, CUP

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13HS1202 INTEGRAL TRANSFORMATIONS

COURSE OUTCOMES:

At the end of the course students able to

1 Gain the concepts of Laplace and inverse Laplace transforms.
2 Solve the ordinary differential equations with initial conditions using Laplace transforms.
3 Expand various algebraic, trigonometric and hyperbolic functions in Fourier series in different intervals.
4 Solve the various boundary value problems using Fourier transforms.
5 Obtain the knowledge of Z and inverse Z – transforms.
6 Compute the solutions of difference equations using Z – transforms.

UNIT-I

Laplace Transforms (LTs)

Laplace transforms of elementary functions – Properties - Transforms of derivatives, integrals –Unit step function-Dirac delta function- Periodic function

Inverse Laplace transforms by Partial fractions – Properties - Convolution theorem – Application of Laplace transforms to ordinary differential equations of first and second order.

UNIT-II

Fourier series (FS)

Euler formulae (without proof) – Expansion of functions as a Fourier series –Change of Interval – Even and odd functions – Half range series – Complex form of Fourier series.

UNIT-III

Fourier Transformations (FTs)

Fourier Integral theorem (without proof) – Fourier transformations – Properties - Sine and Cosine transformations - Inverse Fourier transformations – Convolution – Parseval's Identity.

UNIT-IV

Z - Transformations (ZTs)

Z – Transforms of elementary functions – Properties – Shifting theorems– Initial and Final value theorems - Inverse Z – transforms by convolution and partial fractions – Applications to first and second order difference equations.

TEXT BOOKS:

1 Higher Engineering Mathematics – 42nd Edition - Dr. B.S. Grewal - Khanna publications.
2 A Text Book of Engineering Mathematics – II - T.K.V. Iyengar, B. Krishna Gandhi and Others - S. Chand & Company – Revised edition 2013.

REFERENCE BOOKS:

1 Advanced Engineering Mathematics – E. Kreyzig – 10th Edition – Wiley Publications.

2 A Text Book of Engineering Mathematics – I - T.K.V. Iyengar, B. Krishna Gandhi and Others - S. Chand & Company – Revised edition 2013.

3 Advanced Engineering Mathematics – RK Jain & SRK Iyengar – Revised edition – Taylor &Fransis – 2002.

4 E.Rukmangadachari& E. KeshavaReddy ,Engineering Mathematics , Volume-I&II, 2nd Edition-Pearson publishers.

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16HS1103 APPLIED PHYSICS

COURSE OUTCOMES:

At the end of the course students able to

1. Understand the super position effects like Interference, Diffraction and Polarization and to list the types of optical fibers and using optical fibers in modern communication system and medical field.
2. Interpret the different crystal systems, crystal structure determination by X-rays.
3. Summarize the concepts of LASERS, different types of LASERS and its applications.
4. Study Quantum Mechanics and how Quantum Mechanics is carried out in the fields like medicine and industry.
5. Understand the concepts of Superconductivity and to understand properties of Magnetic and Dielectric Materials and its applications.
6. Analyze various types of Nanomaterials, significance of low dimensional materials, useful applications of Nanotechnology in various field like medicine, biological, chemical, industrial and many important areas in science and technology.

UNIT-I

Optics

Interference: Introduction – Interference in thin film by reflection –Newton's rings.

Diffraction: Introduction - Fraunhoffer diffraction due to single slit, Diffraction grating.

Polarization: Types of polarization-Nicol's prism-production and detection of different polarizations.

UNIT-II

Fiber Optics & Lasers

Fiber optics: Construction of optical fiber-Principle of optical fiber- Acceptance angle and acceptance cone - Numerical aperture- Types of optical fibers – Optical fiber communication system and its advantages - Applications of optical fibers.

Lasers*:* Introduction-Characteristics of laser – Spontaneous and stimulated emission of radiation – Population inversion - pumping methods -Ruby laser- He-Ne laser - Applications of lasers.

UNIT-III

Principles of Quantum Mechanics and Semiconductors

Principles of Quantum Mechanics*:* Waves and particles – de-Broglie hypothesis- Matter waves-Heisenberg uncertainty principle - Schrodinger's time independent wave equation – Physical significance of wave function - Particle in one dimensional infinite potential box.

Semiconductors: Introduction-Fermi level in Intrinsic and Extrinsic semiconductors-law of mass action – Drift & diffusion currents - Einstein's equation – Hall Effect.

UNIT-IV

Crystallography, Superconductors and Nano Materials

Crystallography and X-Ray Diffraction: Introduction – Space lattice-Basis –Unit cell – Lattice parameters –Bravais lattices – Crystal systems- Expression for lattice constant–Packing fractions of SC, BCC and FCC – Miller indices – Expression for Interplanar spacing in cubic crystals – X-ray diffraction - Bragg's law.

Superconductors: Introduction - properties of super conductors - Meissner effect – Type I and Type II superconductors – BCS theory- Applications of superconductors.

Magnetic Materials: Basic Definitions-classification of magnetic materials-hysteresis-soft and hard magnetic materials.

Dielectric Materials: Basic Definitions-Internal Field-Clausius-Mossitti Equation-Dielectric Loss-Applications.

Nano materials: Basic principles of nanomaterials – properties of nanomaterials: Physical, optical, thermal, mechanical and magnetic properties–Applications of nanomaterials.

TEXT BOOKS:

1 K.Thyagarajan, Engineering Physics, I Edition 2013, Tata Macgraw Hill.
2 P.K.Palanisamy , Engineering Physics, II Edition 2010 Scitech Publishers.

REFERENCE BOOKS:

1 A.J. Dekkar , Solid State Physics , Latest edition, 2012. McMillan Publishers.
2 M. Arumugam , Engineering Physics II Edition, 1997 , Anuradha Publications.
3 S. ManiNaidu ,Engineering Physics, I Edition, 2012. Pearson Education.
4 Gaur and Gupta Dhanapati , Engineering Physics, 7th Edition, 1992 Rai Publishers.

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16HS1105 ENVIRONMENTAL STUDIES

COURSE OUTCOMES:

At the end of the course students able to

1. Apply their knowledge in biology, chemistry, physics, earth science and economics for better understanding of earth's environment.
2. Understanding the importance of natural resources.
3. Comprehend the environmental problems from multiple perspectives with emphasis on human modern lifestyle and developmental activities.
4. Recognize the inter connectedness of human dependence on the earth's ecosystems.
5. Understanding the value of biodiversity and the conservation of biodiversity.
6. Influence his society in proper utilization of goods and services.

UNIT-I

Introduction to Environmental Studies & Natural Resources

Environment: Definition, scope, need for public awareness.

Natural Resources: Renewable &Non renewable resources.

Forest Resources: Use, Deforestation-Case Studies;

Water Resources: Use, Over-exploitation of surface and ground water, Environmental impacts of Dams, Floods and Droughts;

Food Resources: Changes caused by agriculture, over grazing; Effects of modern agriculture-fertilizer, pesticide problems, water - logging and salinity;

Energy Resources: Renewable &non renewable energy resources, Use of alternate energy sources.

UNIT-II

Ecosystems & Biodiversity

Ecosystems: Definition, Structure of an ecosystem.

Functions of ecosystem- Food chains, Food web, Energy flow, Ecological pyramids

Types of Ecosystems: Forest Ecosystem, Aquatic Ecosystem.

Biodiversity: Definition, levels of biodiversity, Value of biodiversity, Hotspots of biodiversity,

India as mega biodiversity nation, Threats to biodiversity- Poaching, Habitat loss, Endangered & endemic species of India, Conservation of biodiversity: In-situ & Ex-situ conservation.

UNIT-III

Environmental Pollution

Pollution: Definition, Causes & Control measures of Air pollution, Water pollution, Soil pollution, noise pollution, Solid waste management - Causes, effects and control measures.

Role of an individual in preventing pollution.

UNIT-IV

Social Issues & Environment

From unsustainable to sustainable development, water conservation, rain water harvesting, watershed management, environmental ethics & issues, possible solutions, ozone layer depletion, global warming, consumerism & waste products.

Environment protection acts: Air (Prevention and Control of Pollution) Act – Water (Prevention and Control of Pollution) Act - Wild life Protection Act- Forest Conservation Act, Issues involved in enforcement of environmental legislation, Public awareness.

TEXT BOOKS:

1. Text book of Environmental Studies for Undergraduate Courses by Erach.Bharucha for University Grants Commission, Universities Press.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.
3. Environmental Studies by Benny Joseph, Mc. Graw Hill Publications.

REFERENCE BOOKS:

1. Kaushik A, Kaushik C.P, Perspectives in Environmental Studies, 3rd ed., New International Publishers.
2. Text book of Environmental Sciences and Technology by M.Anji Reddy, BS Publication.
3. Environmental Studies by Anindita Basak-Pearson education.
4. Comprehensive Environmental Studies by J P Sharma, Laxmi Publications.

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16EE1202 **CIRCUIT THEORY**

COURSE OUTCOMES:

At the end of the course students able to

1 Explain the notation and components of electric circuits.
2 Analyze DC and single phase AC circuits using different methods and theorems.
3 Explain series and parallel resonance and their applications.
4 Draw current locus diagrams.

UNIT-I

Introduction to Electrical Circuits: Circuit Concept – R-L-C parameters – Voltage and Current sources -Independent and dependent sources- Source transformation – Voltage – Current relationship for passive elements (for different input signals-square, ramp, saw tooth, triangular).

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

UNIT-II

Network Analysis: Kirchhoff's laws – network reduction techniques – series, parallel, series-parallel. Star-to-delta and delta-to-star transformation. Nodal Analysis, mesh analysis, super node and super mesh for D.C excitations.

Single Phase AC Circuits: R.M.S and Average values and form factor for different periodic wave forms-sinusoidal, square, ramp, saw tooth etc., Phase and phase difference- Complex and Polar forms of representation - J-notation –Steady-state analysis of R, L and C (in series, parallel and series-parallel combinations) with sinusoidal excitation. Concepts of Reactance, Impedance, Susceptance, Admittance, power factor, Apparent, Real & Reactive power, Complex power. Phasor diagrams and analysis.

UNIT-III

Network Theorems - I: Superposition, Thevenin's, Norton's and Reciprocity theorems. Analysis with D.C. & sinusoidal excitations.

Network Theorems - II: compensation, maximum power transfer, Tellegen's, millman's theorems. Analysis with D.C. & Sinusoidal excitations.

UNIT-IV

Locus Diagrams & Resonance: Locus diagrams – series R-L, R-C, R-L-C combination with variation of R, L & C parameters. Resonance – series, parallel circuits, concept of band width and Q-factor.

Network Topology: Definition & Concepts: Graph – Tree, Basic cutset and Basic Tieset matrices for planar networks – Loop and Nodal methods of analysis of Networks with dependent and independent voltage and current sources - Duality & Dual networks.

TEXT BOOKS:

1 Allan R. Hambley, Electrical Engineering Principles and Applications, 3E, PHI, New Delhi.

2 W.H.Hayt, J.E.kemmerly and S.M.Durbin, Engineering Circuit Analysis, 6th Edition, Tata McGraw-Hill, New Delhi, 2006.

3 A.Sudhakar and P.Shyam Mohan, Circuits and Networks Analysis and Synthesis, 2nd Edition, Basic Electrical Engineering, Tata McGraw-Hill, New Delhi, 2004.

REFERENCE BOOKS:

1 Joseph A. Edminister., Theory and Problems of Electric Circuits, Schaum's Outline Series, McGraw Hill Book Company, 5th Edition, 1994.

2 A.Chakrabarti. Circuit Theory (Analysis and Synthesis), 5th Edition, Dhanpat Rai& Co. Delhi, 2008.

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16HS2106 PROFESSIONAL ENGLISH LAB

COURSE OUTCOMES:

At the end of the course students able to

1 Gained practical knowledge in English Speech Sounds.
2 Develop ability on various language functions to fulfill the purpose of speaking and writing in academic and professional context.
3 Communicate effectively in different formal and informal situations.
4 Demonstrate various language functions.

UNIT-I

Phonetics: Vowels, Diphthongs and Consonants, Received Pronunciation, Transcription.

UNIT-II

Stress (Word Stress & Sentence Stress), Intonation, Listening to various accents. Just A Minute (Prepared & Extempore) & Situational Dialogues.

UNIT-III

Listening to Telephone Conversations and Telephone Etiquette.

UNIT-IV

Effective Group Discussion, Strategies for developing G.D. content, Maintaining direction, effective conclusion, -- towards consensus- Audio and video lesions for exposure to and comprehension of spoken English.

TEXT BOOKS:

1 R. K. Bansal and J. B. Harrison, Spoken English, Orient Longman 2006 Edn.
2 Krishna Mohan & NP Singh, Speaking English Effectively, (Macmillan).
3 J. Sethi, KamleshSadanand& D.V. Jindal, A Practical Course in English Pronunciation, (with two Audio cassettes), Prentice-Hall of India Pvt. Ltd., New Delhi.

REFERENCE BOOKS:

1 Daniel Jones, English Pronouncing Dictionary, Current Edition with CD.
2 Dr ShaliniVerma , Body Language- Your Success Mantra , S.Chand & Co, 2008
3 English Dictionary for Advanced Learners, (with CD) International edn. Macmillan 2009.

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16HS2107 APPLIED PHYSICS LAB

COURSE OUTCOMES:

At the end of the course students able to

1. Understand principle, concept, working and application of new technology and comparison of results with theoretical calculations.
2. Develop procedures and observational skills as data is taken and gain a fundamental understanding of simple and complex apparatus used in the experiment.
3. Apply physics concepts to the research and development of new or improved technologies.
4. Students will learn how to effectively work in a team environment when solving Engineering Physics related problems.
5. Obtain and analyze scientific data from laboratory or field instruments.

LIST OF EXPERIMENTS

S.No	Name of the Experiment
1	Determination of radius of curvature of Plano convex lens- Newton's rings.
2	Dispersive power of the prism-Spectrometer.
3	Determination of wavelength of Spectral line of mercury spectrum using Diffraction grating -Normal Incidence.
4	Determination of wave length of a laser source-Diffraction grating.
5	Determination of particle size by using laser source.
6	Numerical Aperture of an optical fiber.
7	Magnetic field along the axis of a current carrying coil-Stewart and Gee's method.
8	Determination of Energy gap of a material of a p-n junction.
9	Determination of Rigidity modulus of a wire material-Torsional pendulum.
10	Determination of thickness of a thin wire by using parallel fringes.
11	Determination of frequency of an electrically vibrating tuning fork- Melde's method.
12	Determination of Planck's Constant.
13	Determination of Hall Coefficient of semi conductor.

TEXT BOOKS:

1. Manual cum Record for Engineering Physics Lab-1&2, by Prof. Sri M. Rama Rao, Acme Learning.
2. Physics lab Manual-Department of H&S, ASCET (Autonomous).

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16ME2104 ENGINEERING WORKSHOP AND IT WORKSHOP

COURSE OUTCOMES:

At the end of the course students able to

1 Utilize workshop tools for engineering practice
2 Analyze and find out suitable method of fabrication of a given simple component.
3 Employ skills acquired to provide quick fixes for routine domestic and/or industrial problems.
4 Appreciate the hard work and intuitive knowledge of the manual workers.

Trades for Exercises

A Carpentry Shop
1 Cross Lap Joint
2 Mortise and Tenon Joint

B Fitting Shop
1 Square Fitting
2 V- Fitting

C Sheet Metal Shop
1 3-Sided Tray (Trapezoidal Tray)
2 Cylinder (Circular Tin)

D House Wiring
1 Wiring for two lamps (bulbs) with independent switch controls with or without looping
2 Wiring for stair case lamp

E Foundry
1 Single Piece Pattern
2 Double Piece Pattern

F Welding
1 Lap Joint
2 T – Joint

Trades for Demonstration

1 Machine Shop (Lathe Machine, Grinding Machine and Drilling Machine)
2 Metal Cutting
3 Plumbing

REFERENCE BOOKS:

1 Engineering Work shop practice, V. Ramesh Babu, VRB Publishers Private Limited, 2009
2 Work shop Manual, P.Kannaiah and K.L.Narayana, SciTech Publishers, 2009
3 Workshop Practice Manual, K. Venkata Reddy, BS Publications

IT WORKSHOP

COURSE OUTCOMES:

At the end of the course students able to

1 Understand the need of PC Hardware, internet & World Wide Web and office suites
2 Learn how to install different softwares
3 Install and use different software like Windows XP, Linux, and MSOffice suite component
4 Understand the troubleshooting techniques

LIST OF EXPERIMENTS:

PC Hardware:

Exercise 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

Exercise 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

Exercise 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

Exercise 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both windows and Linux. Lab instructors should verify the installation and follow it up with a Viva

Exercise 5: Hardware Troubleshooting: Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva

Exercise 6: Software Troubleshooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

Internet & World Wide Web:

Exercise 7: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

Exercise 8: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

MS Word:

Exercise 9&10: The mentor needs to give an overview of Microsoft (MS) word 2007: Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word. Give a task covering to create project certificate. Features to be covered:-Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Inserting table, using Drawing toolbar in word.

MS Excel:

Exercise 11&12: The mentor needs to tell the importance of MS office 2007 Excel as a Spreadsheet tool covering Accessing, overview of toolbars, saving excel files, Using help and resources., Also give a task that is covering the features like Gridlines, Format Cells, Summation, auto fill, Formatting Text.

MS Power Point:

Exercise 13&14: Students will be working on MS power point that helps them create basic power point presentation. Topics covered during this Exercise include :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in Power point. Students shall be given a model power point presentation which needs to be replicated (exactly how it's asked).

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16HS1301 COMPLEX ANALYSIS

COURSE OUTCOMES:

At the end of the course students able to

1. Know the basic definitions and elementary functions of complex variables ; get the concept of C - R theorem and solve problems on complex differentiation related to potential functions using Milne – Thompson Method
2. Compare the real and complex functions and apply the techniques in complex function problems in transmission lines, control systems, signal processing, and electromagnetic field theory
3. Solve problems on complex integration
4. Solve problems on Laurent series – Residue theorem which is applicable in signal processing and communications.
5. Solve problems on bilinear transformation which is useful to convert analog transfer functions into digital transfer functions for digital system design in digital signal processing.

UNIT-I

Functions of a Complex Variable : Elementary functions – Exponential, trigonometric, and hyperbolic functions and their properties - General power Z^c(c is complex) - Principal values Definitions of Continuity, differentiability and analyticity - Cauchy – Riemann Equations in Cartesian and polar co-ordinates–Harmonic and Conjugate Harmonic function –Milne – Thomson method

UNIT-II

Complex Integration & Complex power Series

Complex Integration: Line Integral – Evaluation along a path and by Indefinite Integration – Cauchy's Integral theorem – Cauchy's integral formula

Complex power series: Radius of convergence – Taylor's and Laurent's series

UNIT-III

The calculus of Residues

Singular and Isolated singular points – polesof order 'm' – Essential singularity (Definitions only) Evaluation of residues – Residue theorem – Evaluation of integrals of the type

(a) Improper real integral $\int_{-\alpha}^{\alpha} f(x)dx$ (b) $\int_{0}^{2\pi} f(\cos\theta,\sin\theta)d\theta$ (c) $\int_{-\alpha}^{\alpha} e^{imx} f(x)dx$.

UNIT-IV

Conformal Mapping

Basic transformations-translation, rotation, magnification and inversion-Bilinear transformations - Fixed points – Cross ratio – Determination of bilinear Transformation mapping three given points - Conformal Mapping – Special transformations e^z, z^2sinz and cos z

TEXT BOOKS:

1 Higher Engineering Mathematics - B. S. Grewal – 42nd Edition - Khanna Publications
2 Engineering Mathematics (Vol – III) - T.K.V. Iyengar, B. Krishna Gandhi and Others, S. Chand & Company.

REFERENCE BOOKS:

1 Complex Variables and Applications – 8th Edition - J. W. Brown & R. V. Churchill – McGraw Hill Education
2 A Text Book of Engineering Mathematics, B.V. Ramana - Tata McGraw Hill Publications
3 Complex Variables – 2nd Edition - Schaum Outline Series - McGraw Hill Companies
4 Advanced Engineering Mathematics – RK Jain & SRK Iyengar – 3rd edition – Narosa Book distributors pvt ltd

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16EC1301 ELECTRONIC DEVICES AND CIRCUITS

COURSE OUTCOMES:

At the end of the course students able to

1 Acquire knowledge in the field of solid state materials.
2 Analyze the structure of different types of semiconductor crystal structures.
3 Know the intrinsic property of semiconductor materials.
4 Understand and Analyse the different types of diodes, operation and its characteristics
5 Design biasing circuits using diodes and transistors.
6 Analyze and design diode application circuits.
7 Design and analyse the DC bias circuitry of BJT.
8 Design and analyse the DC bias circuitry of FET.

UNIT-I

Semiconductor Physics &P-N Junction Diode: Semiconductor Materials ,Intrinsic & Extrinsic Materials ,Doping Concentrations ,Continuity equation, Drift &diffusion velocity, Hall effect, P-N junction Manufacturing types, diode equation, V-I characteristics, Temperature dependence, Static & Dynamic resistance, Diode equivalent Circuit, Break down mechanism, Zener diode and its characteristic. Study of Photo Diode, Varactor diode, and Schottky diode.

UNIT-II

Rectifiers and Filters: P-N junction as rectifier ,Half wave ,Full wave (center tap, Bridge) rectifiers, Average current, RMS current, Rectifiers efficiency, Ripple factor ,Form Factor, Percentage of regulation, Peak inverse voltage, Problems on rectifiers.

Filters: Capacitor, Inductor Filters-section filter, π-Section filter, Problems on filters, Zener diode as voltage regulator

UNIT-III

BJT, Transistor Biasing & Stabilization:

Transistor construction, Operation and Configurations, V-I Characteristics, Relation between Transistor Parameters(α,β,γ),Comparison between BJT Configurations ,Analysis of Q-points and Load Lines(AC,DC), Need for Biasing, Types of Biasing Techniques and their stabilization factors (I_{CEO},V_{BE}, β &S) , Thermal runaway ,Problems on Biasing , BJT as Switch and Amplifier

UNIT-IV

Field Effect Transistor: Introduction to FET, Types of FETs, Construction, Operations and Characteristics of JFET and MOSFET, FET Configurations, Comparison of JFET &MOSFET, Comparison between BJT and FET. Biasing of JFET and MOSFET, Problems on biasing. Principal of operation and Characteristics of UJT.

TEXT BOOKS:

1 Jacob Millman, Christos C Halkias&Satyabratajit,Electronic Devices and Circuits, TMH,2nd edition, 2008.
2 Robert L Boylested and Louis Nashelsky, Electronic Devices and Circuit Theory, Pearson India, 9th edition, 2007.

REFERENCE BOOKS:

1 NN Bhargava, DC Kulshrestha and SC Gupta , Basic Electronics and Linear Circuits, TMH, 1 edition 2003.
2 Millman and Grabel , Microelectronics, Tata McGraw Hill,2 edition**,** 1988.

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B.Tech 3rd Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
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16CS1305 INTRODUCTION TO DATA STRUCTURES

COURSE OUTCOMES:

At the end of the course students able to

1 Apply Concepts of Stacks, Queues, Linked Lists
2 Develop Programs For Searching And Sorting, Trees.
3 Interpret concepts of trees.
4 Choose searching algorithms.
5 Develop programs for Sorting and Searching.

UNIT-I

Introduction to data structures, Types, Operations

Stacks: Introduction, Stack Operations, Applications.

Queues: Introduction, Operations on queues, Circular queues, Priority queues & Applications.

UNIT-II

Linked lists: Introduction, Singly linked lists, Circular linked lists, Doubly linked lists, Multiply linked lists, Applications.

Implementation of Stack and Queue using linked list.

UNIT-III

Sorting: Introduction, Selection sort, Bubble sort, Insertion sort, Merge sort, Quick sort, Heap Sort.

Searching: Introduction, Linear search, Binary search, Fibonacci search.

UNIT-IV

Trees: Introduction, Definition and basic terminologies, Representation of trees.

Binary Trees: basic terminologies and types, binary tree traversals, applications. Binary search trees.

TEXT BOOKS:

1 G.A.V PAI, Data Structures and Algorithms, Concepts, Techniques and Applications, Volume1, 1stEdition, Tata McGraw-Hill, 2008.
2 Richard F. Gilberg & Behrouz A. Forouzan, Data Structures, Pseudo code Approach with C, 2ndEdition, Cengage Learning India Edition, 2007.

REFERENCE BOOKS:

1 Langsam, M. J. Augenstein, A. M. Tanenbaum, Datastructures using C and C++, 2nd Edition, PHI Education, 2008.
2 Sartaj Sahni, Ellis Horowitz, Fundamentals of at a Structures in C, 2nd Edition, Orientblackswan, 2010.

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16EE1301 ELECTROMAGNETIC FIELDS

COURSE OUTCOMES:

At the end of the course students able to

1. Understand the concepts of divergence and curl; be able to calculate line integrals, surface and volume integrals.
2. Apply Gauss Law, Coulomb's law and Poisson's Equations to find fields and potentials for a variety of situations including charge distributions and capacitors.
3. Understand the behavior of magnetic and electric fields in the presence of dielectric and magnetic materials
4. Calculate the electric field, scalar potential, stored energy, and capacitance associated with simple distributions of charge.
5. Calculate the magnetic field, stored energy, and inductance for simple distributions of current density.
6. Apply boundary conditions to determine current and charge densities produced on conducting boundaries by applied fields and Identify Maxwell's equations and apply them in both their integral and differential forms to time-varying field problems.

UNIT-I

Electrostatics: Scalars and vectors, Vector Algebra, Dot product, cross product, Introduction to Cartesian, cylindrical and Spherical coordinate systems, Stoke's theorem, Divergence theorem. Electrostatic Fields – Coulomb's Law – Electric Field Intensity (EFI) – EFI due to different charge distributions – 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 equation.

Conductors and Dipole: 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 –Conductors and Insulators. Behavior of conductors in an electric field.

UNIT-II

Dielectric & Capacitance: Electric field inside a dielectric material, polarization. Dielectric – Conductor and Dielectric – Dielectric boundary conditions.Capacitance, capacitance of parallel plate, spherical and 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.

Magneto Statics: Static magnetic fields – Biot-Savart's law – Oesterd's experiment - Magnetic field intensity (MFI) – MFI due to different current distributions – Relation between magnetic flux, magnetic flux density and MFI – Maxwell's second equation.

UNIT-III

Ampere's Circuital Law and its Applications: Ampere's circuital law and its applications viz. MFI due to an infinite sheet of current and a long straight current carrying filament – Point form of Ampere's circuital law – Maxwell's third equation, Field due to a circular loop, rectangular and square loops.

Force in Magnetic Fields: 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.

UNIT-IV

Magnetic Potential: 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 formula – 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.

Time varying fields: Time varying fields-Faraday's laws of electromagnetic induction-its integral and point forms, Maxwell's fourth equation, statically and dynamically induced EMFs, displacement current, Modification of Maxwell's equations for time varying fields,poynting theorem and poynting vector.

TEXT BOOKS:

1 William H. Hayt& John. A. Buck "Engineering Electromagnetics" McGraw -Hill Companies, 7th Editon.2006.
2 Mathew N O Sadiku "Electro magnetic Fields" Oxford Publications, 7th edition, 2006.

REFERENCE BOOKS:

1 D J Griffiths "Introduction to Electro Dynamics" Prentice-Hall of India Pvt.Ltd, 2nd edition, 1999.
2 J P Tewari "Electromagnetics" Khanna publishers, 4th edition, 2009.
3 J. D Kraus "Electromagnetics" McGraw-Hill Inc. 4th edition 1992.
4 . Kamakshaiah "Electromagnetic fields" Right Publishers, 2007.
5 . David K. Chang, "Field and Wave Electromagnetics ", Addison Wesley, Second edition, New Delhi,2001.
6 C. A. Balanis, J. Wiley and Sons "Advanced Engineering Electromagnetics" 2nd Edition, 1989.

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16EE1302 NETWORK ANALYSIS

COURSE OUTCOMES:

At the end of the course students able to

1 Analyze and evaluate the three phase balanced and unbalanced loads.
2 Understand the basics of DC and AC transients and their evaluation.
3 Understand and create the various parameter and their applications in core filed.
4 Analyze the various types of continuous and discontinuous signals and its applications in electrical circuits.

UNIT-I

Three Phasebalanced Circuits: Phase sequence – Star and delta connection – Relation between line and phase voltages and currents in balanced systems.

Three Phase Unbalanced Circuits: Unbalanced 3 phase circuits- loop method- Application of Millman's Theorem – Star delta Transformation Technique – Two Wattmeter method of measurement of three phase power.

UNIT-II

Laplace Transforms: Introduction, Laplace transforms of Step, Ramp and Impulse signals, Waveform synthesis – Laplace transform of Periodic Signals. Initial value and final value theorems.

Transients: Introduction, Direct current Transients – RL Transient, RC Transient, RLC Transient, two mesh transients. Alternating Current Transients - RL Sinusoidal Transient, RC Sinusoidal Transient, RLC Sinusoidal Transient, two mesh transients. (Both Differential equation and Laplace Transform approaches)

UNIT-III

Network Functions: Concept of complex frequency, Definition of operational/ transformed impedances and admittances, network functions for the Ladder networks; Driving- point and transfer functions.

Two Port Networks: Z, Y, ABCD and hybrid parameters and their relations-reciprocity and symmetry conditions. Interconnection of two port networks in series, parallel and cascade configurations, Illustrative problems.

UNIT-IV

Fourier analysis of AC Circuits: Fourier theorem-Trigonometric form and exponential form of Fourier series-Conditions of symmetry-line spectra and phase angle spectra-Analysis of electrical circuits to Non sinusoidal periodic wave forms.

Fourier Transforms: Fourier integrals and Fourier transforms-Properties of Fourier transforms and applications to electrical circuits.

TEXT BOOKS:

1 W.H.Hayt, J.E.Kimmerly, and S.M.Durbin "Engineering circuit analysis" McGraw HillEducation private limited, 6th Edition, 2002.
2 M.E Van Valkenburg, "Network Analysis" Prentice Hall of India, 3rd Edition, 2000.

REFERENCE BOOKS:

1 C. K. Alexander and M. N. O. Sadiku, "Fundamentals of Electric Circuits" Tata McGraw-Hill, 2nd edition, 2004.
2 MahmoodNahvi, Joseph Edminister "Electric Circuits", Schuam Series,5th edition, 2011.
3 Chakrabati A, "Circuit Theory (Analysis and Synthesis)" DhanpathRai& Sons, 6th edition, 2004.
4 MahmoodNahvi and JoselphEdminister, "Electric Circuits" Schaum's Outline series TMH, 2004.
5 Ravish R Singh, "Electrical Networks" Tata McGraw-Hill Publication, 6th edition, 2010.
6 Sudhakar and Shyammohan S Palli, "Circuits & Networks" Tata McGraw-Hill, 4th edition, 2010.

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16EE1303 DC MACHINES

COURSE OUTCOMES:

At the end of the course students able to

1 Demonstrate knowledge on different types of single and multi excited magnetic field systems, construction and operation of various DC machines, starting and speed control of DC motors.
2 Design armature windings for DC machines and starters for DC motors.
3 Evaluate the performance of DC machines.
4 Select suitable DC machine for domestic and industrial applications

UNIT-I

Electromechanical Energy Conversion Principles: Principle of Energy Conversion-Single excited magnetic systems- Expression for electrical energy input, energy stored in magnetic field, mechanical work done and the mechanical force developed-numerical problems. Doubly excited magnetic systems - Expression for magnetic torque.

DC Generators-Construction and Operation: DC Generators-Principle of operation-constructional features, armature windings-lap and wave windings, - Winding Diagrams- EMF Equation- Numerical problems.

UNIT-II

Armature Reaction in DC Generators: Armature reaction – Cross magnetizing and de-magnetizing AT/Pole, compensating winding, dummy coils, Commutation-reactance voltage-methods of improving commutation.

Classification of DC Generators: Methods of Excitation – Separate Excitation, Self excitation, conditions for building-up of EMF- critical field resistance and critical speed-problems, causes for failure to self excitation and remedial measures.

UNIT-III

Operating Characteristics of DC Generators: Operating characteristics of separately excited, self excited generators-Shunt, Series and Compound-problems, parallel operation of DC generators-load sharing, applications.

DC Motors: DC motors-Principle of operation-importance of back emf, torque equation-Armature & Shaft torques-expressions, operating characteristics and applications of shunt, series and compound motors, applications.

UNIT-IV

Starting and Speed Control of DC Motors: DC motor starters -function of a starter-construction-starting resistance-no load coil- over load release. Operation of 2- point, 3-point and 4- point starters. Speed equation of a dc motor- speed control methods for dc motors-Armature voltage and field flux control, Ward-Leonard system -Problems.

Losses, Efficiency and Testing of DC Machines: Losses-constant and variable types and their effect- calculation of efficiency, condition for maximum efficiency, methods of testing-Swinburne's test, Brake test, Hopkinson's test, Field test, Retardation test and separation of losses.

TEXT BOOKS:

1 Dr.P.S.Bhimbra, "Electric Machinery", Khanna Publishers, 7th edition, 2006.
2 J.B.Gupta, "Theory and performance of Electrical Machines", Khanna Publishers,14th edition, 2010.

REFERENCE BOOKS:

1 Charles I. Hubert."Electric Machines: Theory, Operating Applications, and Controls", Pearson Publication, 2nd edition, June 2002.
2 A.E.Fitzerald, C.kingsley and S.Umans,"Electrical Machinery", Tata McGraw-Hill companies, NewDelhi, 6th edition, 2008.
3 Samarjit Singh, "Electrical Machines", Pearson education, 2012.
4 R.K.Rajput,"A Text book of Electrical Machines", Lakshmi Publications, 2005.
5 A. E. Clayton,'' The Performance and Design of Direct Current Machines (English) 1st Edition

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16EC2305 ELECTRONIC DEVICES AND CIRCUITS LAB

COURSE OUTCOMES:

At the end of the course students able to

1. Measure voltage, frequency and phase of any waveform using CRO.
2. Generate sine, square and triangular waveforms with required frequency and amplitude using function generator.
3. Lean the operation of Components & instruments used.
4. Analyze the characteristics of different electronic devices such as diodes, transistors etc., and simple circuits like rectifiers & regulators etc.
5. Analyze the characteristics of UJT

LIST OF EXPERIMENTS:

1. PN Junction diode characteristics A. Forward bias B. Reverse bias.
2. Zener diode characteristics
3. Transistor CB characteristics (Input and Output)
4. Transistor CE characteristics (Input and Output)
5. Half wave rectifier, Half wave rectifier with capacitor filter.
6. Full wave center tapped rectifier with and without capacitor filter.
7. FET characteristics
8. Design of self bias for CE configuration
9. Design of Zener regulator.
10. Design of series voltage regulator.
11. Design of shunt voltage regulator.
12. UJT characteristics

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16EE2305 ELECTRICAL CIRCUITS LAB

COURSE OUTCOMES:

At the end of the course students able to

1 Verify network theorems for different electrical circuits.
2 Measure active power of the balanced and unbalanced loads.
3 Verify different networks by PSPICE Simulation software.

LIST OF EXPERIMENTS:

1. Verification of Thevenin's and Norton's theorem.
2. Verification of superposition theorem and maximum power transfer theorem.
3. Verification of Compensation theorem.
4. Verification of Reciprocity and Millmann's theorem.
5. Locus diagrams of RL and RC series circuits.
6. Series and parallel resonance.
7. Determination of self, mutual inductance and coefficient of coupling.
8. Verification of Z and Y Parameters.
9. Verification of Transmission and Hybrid parameters.
10. Measurement of active power for star and delta connected balanced loads
11. Measurement of Reactive power for star and delta connected balanced loads.
12. Measurement of three phase power by two Watt meter method for Unbalanced loads

Simulation:

13. Simulation of DC circuits.
14. DC transient response.
15. Mesh analysis.
16. Nodal analysis.

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16EE2306 **ELECTRICAL WORKSHOP**

COURSE OUTCOMES:

At the end of the course students able to

1 Have a fair knowledge about the operation and troubleshooting of various lamps, motors and generators.
2 To test various electronic components and design various electronic circuits.

LIST OF EXPERIMENTS:

1. Troubleshooting of various lamps.
2. Installation of electrical appliances.
3. Troubleshooting of Electrical Machines
4. Various types of electrical installation earthing procedures.
5. Design of small Transformers
6. Design of Industrial Hall Lighting.
7. Electronic component testing.
8. Design and fabrication of rectifiers with filters.
9. Soldering practice.
10. Study of Layout of Substation.
11. Characterization of electrical cables.
12. Fabrication of PCB.
13. Design and fabrication of Adders.
14. Design and fabrication of Counters.
15. Design and fabrication of oscillators.

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16AS3301 COMMUNICATION SKILLS PRACTICE

COURSE OUTCOMES:

At the end of the course students able to

1 In this strand, students develop learning and thinking skills and strategies to become self-directed, lifelong learners
2 They discover how to manage their own learning and acquire knowledge and skills that they can transfer to a variety of situations related to learning, work, and daily life

- **Development of Proficiency in Concepts of effective communication:**

Practice on Oral and spoken communication skill & testing– Communication process and voice & accent, voice clarity, handling them voice modulation & intonation,
KISS (Keep it short and sweet) in word stress etc.
Composing Feedback and questioning effective messages.
Non–Verbal Communication: Objectiveness in Argument its importance and nuances:
Development etiquettes and Facial Expression,
Posture, manners Gesture , Eye contact, appearance Study of different pictorial (dress code).

- **Art of Speaking**

Introduction – What makes communication important? – Defining communication – special feature of communication – communication process – channels of communication – Formal communications network – Informal communications network (Grapevine Communication) – Importance of Communication – Barriers to communication – Tips for effective communication – conversation tips – what is presentation? – Tips for powerful presentation – Art of public speaking – Importance of public speaking – Benefits of public speaking – Public speaking tips – overcoming fear of public speaking.

Activity : Conservation; Presentation; Pubic Speaking

- **Art of Writing**

Introduction – Importance of Writing – Writing tips – Drawbacks of written communications.

- **Art of Writing E-Mail**

Introduction – The Mail Magic – use appropriate salutations – Make the subject matter significant – keep a dictionary close by – use commas – use smileys – when I doubt, preface – include previous message – shorten the file attachments – Reread before pressing 'Send' button – Be polite, and reciprocate good deeds – Anticipate, empathize, understand – what netiquette?

- **Etiquette and Manners**

Etiquette

Introduction – Modern etiquette – Benefits of etiquette – classification of etiquette – accompanying women – Taboo topics – proposing the toast.

Manners

Introduction – Poor Manners noticed in youth – why should you practice good manners ? – Practicing good manners – Manners at the wheel driving – Manners in the flight – Respecting the sacred – visiting holy places – Dealing with the challenged – Attending the funeral – Professional

manners – social skills (manners) – getting along with people – Manners to get respect from others – To sum up : corporate grooming tips – Mind your mobile manners – Annoying office habits.

Activity : 1. Test your Etiquette; 2. Test your Manners

- **Preparing CV / Resume**

Introduction – Meaning – Differences among Bio-data, CV and Resume – The terms – The purpose of CV writing – Types of Resumes – Interesting facts about Resumes – CV writing tips – CV/Resume preparation – the do's – Resume checkup – Electronic Resume tips – References – Power words – Common Resume builders – Key skills that can be mentioned in the Resume – Cover letters – Cover letter tips

Expression of non-verbal communication and its analysis

- **Written Communication Skill**:
  Practice for:
  - Correction of errors
  - Making of Sentences
  - Paragraph Writing
  - Leave Application and simple letter writing

- **Presentation Skill practice**
  - Preparing in presentation
  - Delivery of presentation
- **Telecommunication Skills**
  - Tele – etiquette
  - Receiving Calls
  - Transferring calls
  - Taking Message/ Voice Mails
  - Making Outgoing Calls
- **Computer and Internet operational**
  - Key boarding skills
  - Practice on computer using MS office XP
  - Practice on sending & receiving e-mail

REFERENCE BOOKS:

1 Soft skills Training – A workbook to develop ski lls for employment by Fredrick H. Wentz

2 Personality Development and Soft skills, Oxford University Press by Barun K. Mitra 3. The Time Trap : the Classic book on Time Management by R. Alec Mackenzine

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16AS3302 PROFESSIONAL SOCIETY ACTIVITIES-I

Professional Society Activities (PSA) course is aimed at enhancing the self learning, communication, managerial skills of the students by engaging them in various Co & Extra Curricular activities activities during their course of study. Activities in each of the department shall be designed and conducted by the Professional Society Executive Committee whose composition is:

1. Faculty Mentors- 2 No.
2. Student Chairman: 1 No.- Final year Student
3. Student General Secretary: 1 No.- Third year Student
4. Treasurer: 1 No.- Third year Student

Student Members: 2 No.s from each class

PSA related activities would be of the following nature but not limited to:

Activity#0 : Constitution of Student Body at respective departments & Inaugural Function

Activity#1 : Just A Minute

Activity#2 : Technical Quiz

Activity#3 : Open House- Lab Demo

Activity#4 : Technical Paper Presentation- Preliminary

Activity#5 : Technical Paper Presentation- Final

Activity#6 : Poster Presentation

Activity#7 : Collage- A theme based event

Activity#8 : Debate Competition

Activity#9 : Group Discussion Competition

Activity#10 : Mock Interviews

Activity#11 : Model Exhibition

Activity#12 : Valedictory Function

Composition of Professional Society Executive Committee:

1. Faculty Mentors- 2 No.
2. Student Chairman: 1 No.- Final year Student
3. Student General Secretary: 1 No.- Third year Student
4. Treasurer: 1 No.- Third year Student
5. Student Members: 2 No.s from each class

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16HS1401 MATRICES AND NUMERICAL METHODS

COURSE OUTCOMES:

At the end of the course students able to

1. Compute the rank of matrices ; solve the linear system of equations (homogeneous as well as non – homogeneous)
2. Calculate the eigen values and eigenvectors of the matrices ; understand the complex matrix properties
3. Solve problems using Cayley – Hamilton theorem ; reduce the given matrices into diagonal form ; reduce the matrices into canonical form by orthogonal transformation
4. Solve exercises by N-R method ; get to know the concept of finite differences and apply to various engineering problems
5. Analyze problems using Trapezoidal and Simpson's 1/3rules ; solve first order ODEs using Euler's and R- K methods of 2^{nd} and 4^{th} order
6. Gain the knowledge of vector differentiation and solve the problems of various engineering problems

UNIT-I :

Matrices

Rank by Echelon and normal forms – Solution of system of linear equations – Eigenvalues and Eigenvectors - Cayley- Hamilton theorem (without proof) and its applications-Reduction to diagonal form – Quadratic forms – Reduction of Quadratic form to canonical form by orthogonal transformation and their nature

UNIT-II :

Solutions of algebraic and transcendental equations

Solutions of algebraic and transcendental equations by Bisection, Regula – Falsi and Newton – Raphson Method - System of linear equations – Gauss elimination - LU decomposition Gauss – Seidel Iteration Method

UNIT-III :

NTERP0LATION & CURVE FITTING

Newton's forward and backward interpolation formulae - Relations between difference operators – Lagrange's interpolation

Least squares curve fitting –fitting a straight line –non-linear curve fitting –Parabolic, Exponential and power function

UNIT-IV :

Numerical Differentiation &Integration and Differential Equations

Formulae for derivatives - Numerical integration using Trapezoidal and Simpson's 1/3rules - Numerical solutions of first order ODEs – Euler's, Runge - Kutta methods of 2^{nd} and 4^{th} orders – Milne's Predictor – Corrector Method

TEXT BOOKS:

1 Higher Engineering Mathematics, Dr. B.S. Grewal – 42nd Edition - Khanna Publications
2 E.Rukmangadachari& E. Keshava Reddy ,Engineering Mathematics , Volume-I&II, 2nd Edition-Pearson publishers

REFERENCE BOOKS:

1 Introduction to Numerical Analysis – S. S. Sastry – Prentice Hall of India
2 Advanced Engineering Mathematics – E. Kreyzig – 10th Edition – Wiley Publications
3 A Text Book of Engineering Mathematics – I - T.K.V. Iyengar, B. Krishna Gandhi and Others - S. Chand & Company – Revised edition 2013
4 A Text Book of Engineering Mathematics, B.V. Ramana - Tata McGraw Hill Publications

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16ME1302 FLUID MECHANICS AND HYDRAULLIC MACHINERY

COURSE OUTCOMES:

At the end of the course students able to

1. Employ the basic knowledge of hydraulics in finding fluid properties, performance parameters of hydraulic turbines and pumps.
2. Study 1-D viscous and non-viscous flow through pipes. Bernoulli's equation, laminar and turbulent flow
3. Analyze hydraulic machines by developing mathematical models to study characteristics of various steady flow and performance parameters of hydraulic machinery.
4. Present feasible design solutions to the construction of efficient hydraulic turbines and pumps.
5. Identify the manageable areas in hydraulic machinery to reduce the mechanical losses.

UNIT-I

Fluid statics:

Physical properties of fluids- specific gravity, viscosity, surface tension- vapor pressure and their influence on fluid motion- atmospheric gauge and vacuum pressure –measurement of Pressure- Piezometer, U-tube and differential manometers.

Hydro Static Forces on surfaces and submerged bodies: Total pressure, center of pressure, Hydrostatic forces on vertical, inclined and curved surfaces

UNIT-II

Fluid Kinematics and Dynamics:

Classification of flows, Stream line, path line and streak lines and stream tube, differential Equation of continuity, Acceleration. Forces acting on a Fluid in Motion; Euler's equation of motion; Bernoulli's equation; Momentum principle; Force exerted on a pipe bend.

Flow through Pipes:

Reynold's experiment- Darcy Weisbach equation- Minor losses in pipes- pipes in series and pipes in parallel- total energy line-hydraulic gradient line. Measurement of flow: pilot tube, venturimetre, and orifice meter, flow nozzle

UNIT-III

DIMENSIONAL ANALYSIS AND SIMILITUDE: Introduction, dimensions; Dimensional homogeneity; Methods of dimensional analysis- Rayleigh‟s method; Buckingham – Pi theorem; model analysis; similitude-types of similarities; Dimensionless numbers; Model laws ; Partially submerged objects; types of models; Scale effect.

BOUNDARY LAYER THEORY& DRAG AND LIFT: Boundary layer – concepts, Prandtl‟s contribution, Characteristics of boundary layer along a thin flat plate, laminar and turbulent Boundary layers, separation of BL. expression for drag and lift; Lift and Drag Coefficients; pressure drag and friction drag; Streamlined and bluff bodies

UNIT-IV

Basics of turbo machinery:

Hydrodynamic force of jets on stationary and moving flat, inclined, and curved vanes, jet striking centrally and at tip, velocity diagrams, work done and efficiency, flow over radial vanes

Principles of Hydraulic Turbines – Impulse and Reaction Turbines - Pelton Turbine – Francis Turbine – Kaplan Turbine, working principles, design principles.

Centrifugal pumps – Axial flow pumps, working principles, design principles

TEXT BOOKS:

1 Hydraulics & Fluid Mechanics by P. N. Modi& S. N. Seth; Standard Book house, New Delhi
2 Fluid Mechanics & Hydraulic Machines by Dr. R. K. Bansal; Laxmi Publications, New Delhi.

REFERENCE BOOKS:

1 Hydraulic Machines by JagdishLal, Metropolitan.
2 A. K. Jain; Fluid Mechanics, Khanna Publishers, Delhi
3 Rajput, Fluid mechanics and fluid machines, S.Chand&Co.
4 D.S. Kumar Kataria, Fluid Mechanics & Fluid Power Engineering, Publishers: D.S. Kumar Kataria&Sons.
5 K R Arora, Fluid Mechanics, Hydraulics and Hydraulic Machines, Standard Publishers
6 Kumar K.L., Engineering Fluid Mechanics, Eurasia Publishing House (P) Ltd., New Delhi.

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16EC1405 DIGITAL ELECTRONICS

COURSE OUTCOMES:

At the end of the course students able to

1 Differentiate between analog and digital representations.
2 Convert a number from one number system to its equivalent in of the other Number system. Understand the difference between BCD and straight binary.
3 Implement logic circuits using basic AND, OR and NOT gates.
4 Use De-Morgan's theorem to simplify logic expressions.
5 Describe the concept of active LOW and active HIGH logic signals.
6 Use Boolean algebra and K-map as tool to simplify and design logic circuits.
7 Construct and analyze the operation of flip-flop and troubleshoot various types of flip-flop.

UNIT-I :

Digital Codes: Types of number systems – complement representation of Negative numbers, Implementation of simple arithmetic operations and conversions using Decimal, Binary, Octal and Hexa-Decimal numbers. Error detecting & Error correcting codes- Hamming codes.

Boolean Algebra: Fundamental postulates of Boolean algebra, basic theorems and properties, Switching functions, Canonical and Standard form, algebraic simplification, digital logic gates, properties of XOR gates, universal gates, multilevel NAND/NOR realizations.

UNIT-II :

Minimization of Switching Functions: Map Methods, Prime Implicants, Don't care combinations, Minimal SOP and POS forms, tabular method, Prime- Implicant chart, Simplification Rules.

UNIT-III :

Combinational Logic Design: Design using conventional Logic Gates, Encoder, Decoder, Multiplexer, De-Multiplexer, Introduction to Modular design using IC chips, MUX Realization of switching functions, Parity bit generator, Code- converters.

UNIT-IV

Programmable Logic Devices: Basic PLD's:-ROM, PROM, PAL, PLA. Realization of Switching functions using PLD's.

Sequential Circuits: Classification of sequential circuits- Synchronous, Asynchronous, Pulse mode, Level mode with examples, Basic Flip-Flops, Triggering and Excitation Tables. Steps in Synchronous Sequential Circuit Design. Design of modulo -N Ring & Shift counters, Serial Binary Adder, Sequence Detector

TEXT BOOKS:

1 ZviKohavi, Switching & Finite Automata Theory, 2nd ed., TMH, 1979.
2 Morris Mano, Digital Design, 3rd ed., PHI, 2008.
3 A.Anand Kumar, Switching Theory and Logic Design, 1st ed., PHI, 2011.

REFERENCE BOOKS:

1 Fletcher, An Engineering Approach to Digital Design,1sted., PHI, 2001
2 Charles H. Roth, Fundamentals of logic design, 5th ed., Thomson Publications,2006.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

B.Tech 4th Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
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16EC1406 ANALOG ELECTRONIC CIRCUITS

COURSE OUTCOMES:

At the end of the course students able to

1 Analyze Single stage amplifier at low and High frequencies using BJT and FETs.
2 Analyze Multi stage amplifiers at low and High frequencies using BJT and FETs.
3 Recognize the design and importance of feedback in amplifiers in practical applications.
4 Understand the principle, operation and design of oscillators.
5 Comprehend the use of Power amplifiers and Tuned amplifiers in real time applications
6 Learn the design of Differentiator and Integrator circuits, clippers.
7 Construct and analyze the circuits Clampers, clampers and multivibrators .

UNIT-I

Single Stage Amplifiers Design and Analysis: Review of CE, CB, CC& CS amplifiers-Classification of Amplifiers, Distortion in amplifiers-Approximate analysis, CE, CB, CC amplifiers comparison.

BJT & FET Frequency Response: Logarithms-Decibels-General frequency consideration-Low frequency analysis-Low frequency response of BJT amplifiers-Low frequency response of FET amplifier-Miller effect capacitance-High frequency response of BJT amplifier-Square wave testing

UNIT-II

Feedback Amplifiers: Concept of feedback, Classification of feedback amplifiers, General characteristics of negative feedback amplifiers, Effect of Feedback on Amplifier characteristics Voltage series-Voltage shunt, Current series and Current shunt Feedback configurations-Simple problems.

Oscillators: Conditions for oscillations. RC and LC type Oscillators, Crystal oscillators, Frequency and amplitude stability of oscillators, Generalized analysis of LC oscillators, Quartz, Hartley, and Colpitts Oscillators, RC-phase shift and Wien-bridge oscillators.

UNIT-III

Large Signal Amplifiers: Class -A Power Amplifier, Maximum Value of Efficiency of Class-A Amplifier, Transformer coupled amplifier- Push Pull Amplifier-Complimentary Symmetry Circuits (Transformer Less Class B Power Amplifier)-Phase Inverters, Transistor Power Dissipation, Thermal Runway, Heat sinks.

Linear Waveshaping: High pass, low pass RC circuits, their response for sinusoidal, step, pulse, square and ramp inputs.

Clippers and Clampers : Diode clippers, Transistor clippers, clipping at two independent levels, Transfer characteristics of clippers, Emitter coupled clipper, Comparators, applications of voltage comparators, clamping operation, clamping circuits using diode with different inputs, Clamping circuit theorem, practical clamping circuits, effect of diode characteristics on clamping voltage, Transfer characteristics of clampers.

UNIT-IV

Switching Characteristics of Devices: Diode as a switch, piecewise linear diode characteristics, Transistor as a switch, Breakdown voltage consideration of transistor, saturation parameters of Transistor and their variation with temperature, Design of transistor switch, transistor-switching times.

Multivibrators: Analysis and Design of Bistable, Monostable, AstableMultivibrators and Schmitt trigger using transistors.

TEXT BOOKS:

1 Robert L.Boylestad, Louis Nasheisky, Electronic Devices and Circuit Theory, 9th ed., Pearson Education ,2007.

2 S. Salivahanan, N. Suresh Kumar and A. VallavaraJ, Electronic Devices and Circuits, 2nd ed., TMH, 2008.

3 David A. Bell, Solid State Pulse Circuits, 4th ed., PHI, 2002.

REFERENCE BOOKS:

1 Robert r. Paynter, Introductory Electronic Devices and Circuits,7th ed., PEI, 2009.

2 Anil K. Maini, VarshaAgrawal, Electronic Devices and Circuits, 1st ed., WILEY, 2009.

3 Jacob Milliman, HarbertTaub and Mothlkl S Prakashrao, Pulse,Digital& Switching Waveforms , 2nd ed., TMH, 2008.

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B.Tech 4th Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
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16EE1401 TRANSFORMERS AND INDUCTION MOTORS

COURSE OUTCOMES:

At the end of the course students able to

1 Know What, Why and How the transformers and their working.
2 Materials used in construction of transformers and types of construction.
3 Analyze transformer behaviour under normal and abnormal load conditions using their mathematical background and circuit analysis techniques.
4 Understand the challenges and problems of parallel operation of transformers to improve the load sharing capabilities and reliability.
5 Understand the various configurations of three phase transformers and their analysis.
6 Investigate different speed control methods of three phase induction motors essential for industrial drives.

UNIT-I

Single Phase Transformers

Principle of operation, Constructional details, Ideal transformer-properties, Hysteresis & Eddy current losses- minimization- Separation of losses, EMF equation, Transformer Phasor Diagrams-at no load, under load, -numerical problems

Performance Analysis: Equivalent circuit-referred to primary and secondary-numerical problems, Losses and Efficiency at different loads and power factors, Per Unit system, Voltage Regulation-conditions for Zero regulation and Maximum regulation, All-Day efficiency, Effect of variations of frequency & supply voltage on Iron losses, numerical problems.

UNIT-II

Single Phase Transformers, Autotransformers and Polyphase Transformers:

Single Phase Transformers and Autotransformers : Testing-Open circuit and Short circuit tests-numerical problems, Polarity test, Sumpner's test-Determination of efficiency and regulation, protection of transformer-Buchholz Relay, parallel operation- with equal and unequal voltage ratios-. Autotransformers: Advantages of auto-transformer over two winding transformer, comparison of characteristics of auto-transformer and two-winding transformers-numerical problems

Polyphase Transformers: Polyphase connections- Y/Y, Y/Δ, Δ/Y, Δ/Δ-relations between line & phase voltages and Currents and Open Delta, Vector grouping-types, Harmonics in phase voltages, Three-winding transformers, Tertiary windings- determination of Z_p, Z_s and Z_t transients in switching, Magnetising Inrush current, Off-load and on-load tap changing transformers, Scott connection, numerical problems

UNIT-III

Induction Motors

Three-Phase Induction Motors: Construction –Squirrel Cage and wound rotor, Production of rotating magnetic field, Principle of operation, Rotor EMF and rotor frequency, Rotor reactance, Rotor current and power factor at standstill and during operation-numerical

problems.

Performance characteristics of Induction Motors: Power flow diagram-Motor input, Stator losses, Rotor input, Rotor copper loss and mechanical power developed, Torque equation, Expressions for maximum torque and starting torque, Torque- slip characteristics, crawling and cogging, numerical problems

UNIT-IV

Induction Motors

Circle Diagram of Induction Motors: No-load and Blocked-rotor tests, Circle diagram-predetermination of performance, Methods of starting, Types of starters-Direct On Line (DOL) starting, Autotransformer starting, Star-Delta(Y-Δ) starting. Starting current and starting torque calculations-numerical problems.

Speed Control of Induction Motors: Speed control – change of frequency, change of poles-methods of consequent poles–cascade connections, rotor resistance method, Injection of an emf into rotor circuit, Induction generator, Applications and numerical problems.

TEXT BOOKS:

1 Dr.P.S.Bhimbra, "Electric Machinery", Khanna Publishers, 7th edition, 2006.
2 J.B.Gupta, "Theory and performance of Electrical Machines", Khanna Publishers, 14th edition, 2010.

REFERENCE BOOKS:

1 Charles I. Hubert."Electric Machines: Theory, Operating Applications, and Controls", Pearson publication, 2nd edition, June 2002.
2 A.E.Fitzerald, C.kingsley and S.Umans,"Electrical Machinery", Tata McGraw-Hill companies, New Delhi, 6th edition, 2008
3 Samarjit Singh, "Electrical Machines", Pearson education, 2012.
4 R.K.Rajput,"A Text book of Electrical Machines", Lakshmi Publications, 2005.

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B.Tech 4th Semester – EEE	**L**	**T**	**P**	**Oth**	**C**
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16EE1402 GENERATION OF ELECTRIC POWER

COURSE OUTCOMES:

At the end of the course students able to

1. Understand the principle and operation of conventional energy sources like thermal, gas, nuclear power and Hydel generation.
2. Understand safety issues in nuclear power generation.
3. Understand the principle and operation of non conventional energy sources like solar, wind, biomass, geothermal and ocean energy sources.
4. Compare conventional and non-conventional sources.
5. Judge the importance of the renewable resources of energy in combating environmental pollution.
6. Evolving the clean and green energy techniques.
7. Evaluate the economics of power generation.
8. Design proper methodology for power tariff

UNIT-I

Thermal Power Plants: Schematic layout of thermal power station (TPS), description of TPS components: economizer, boilers, super heaters, turbine, condensers, electro static precipitator (ESP), chimney and cooling tower.

Nuclear Power Plants: Principle and operation of nuclear reactors, different Reactor components, radiation hazards and safety precautions, Types of nuclear reactors-PWR, BWR and FBR.

UNIT-II

Hydro-Electric Power Plants: Introduction of Hydro-electric plant & its layout. Advantages and disadvantages of Hydro-electric plants, selection of site for Hydro-electric plant, essential parts & features of Hydro-electric power plant, classification of Hydro-electric power plants depending on load & head.

Biogas, Geothermal and Ocean Energy Plants: Principles of bio conversion, types and characteristics of bio gas digesters. Principle & method of harnessing geothermal and ocean energy. Economic aspects.

UNIT-III

Principles of Solar Power Generation: Basics principles of solar cells**,** various types of solar modules,Role and potential of solar energy options, Principles of Solar radiation. Types of Solar Energy collectors, Different methods of solar energy storage, solar applications, Economic aspects.

Wind Energy Generation: Role and potential of wind energy option, types of wind mills-performance characteristics, Applications, Betz Criteria, economic aspects.

UNIT-IV

Economic Aspects of Power Generation: Load curve, load duration, integrated load duration curves; Load, Demand, diversity, capacity and Plant use factors, numerical Problems, classification of costs: fixed, semi fixed and Running costs.

Tariff Methods: Desirable characteristics of a Tariff method - Tariff methods: flat rate, block rate, two part, three part and power factor tariff methods and Numerical problems.

TEXT BOOKS:

1 M.L.Soni, P.V Gupta,U.S Bhatnagar and A.Chakrabarti "A text book on Power System Engineering" DhanpatRai& Co.Pvt.Ltd.1999

2 V.K Mehta and Rohit Mehta "Principles of Power Systems" S.Chand& company LTD, New Delhi 2004.

REFERENCE BOOKS:

1 S.N.Singh "Electrical Power Generation, Transmission and Distribution", PHI, 2003.

2 GD Rai "Non Conventional Energy Sources "Khanna Publishers, 4th edition 2000.

3 M.V Deshpande "Elements of power station design and practice, wheeler publishing 2005.

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16ME2306 FLUID MECHANICS AND HYDRAULIC MACHINERY LAB

COURSE OUTCOMES:

At the end of the course students able to

1 Use various flow measurement instruments.
2 Calculate the losses and discharge in pipes and conduct performance tests on pumps and turbines to find the efficiency.
3 Demonstrate systematic approach in conducting experiments.
4 Prepare reports on the data collected and draw inferences.

LIST OF EXPERIMENTS

1 Venturimetre: Determination of Coefficient of discharge
2 Orifice meter: Determination of Coefficient of discharge
3 Determination of friction factor of Pipes
4 Determination of loss of head in pipes due to bends, sudden contractions and sudden expansion
5 Verification of Bernoulli's equation
6 Impact of jet on vanes
7 Performance test on Pelton wheel turbine
8 Performance test on Francis turbine
9 Performance test on Kaplan turbine
10 Performance test on single stage centrifugal pump
11 Performance test on multi stage centrifugal pump
12 Performance test on reciprocating pump

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16EC2408 PULSE AND DIGITAL CIRCUITS LAB

COURSE OUTCOMES:

At the end of the course students able to

1 Design and analyze diode applications like Linear and non linear wave shaping.
2 Design and analyze design of logic gates.
3 Design and analyze Switching characteristics of diodes and transistors
4 Construct the circuits of Multivibrators and Schmitt trigger.
5 Model the circuits of time Base generators and oscillators

List of Experiments:

1. Linear wave shaping.
2. Non linear wave shaping-clippers.
3. Non linear wave shaping-clampers.
4. Transistor as a switch.
5. Design of logic gates.
6. Study of flip-flops.
7. Sampling gates.
8. Astable Multivibrator.
9. Monostable Multivibrator.
10. Bistable Multivibrator.
11. Schmitt trigger.
12. UJT Relaxation oscillator.
13. Colpitts oscillator.
14. RC- Phase shift oscillator.

Additional Experiments:

15. Bootstrap sweep circuit.
16. Constant current sweep generator using BJT.

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16EE2403 DC MACHINES LAB

COURSE OUTCOMES:

At the end of the course students able to

1 Apply the practical methods to find the performance of various types of DC machines.
2 Identify a suitable method to find out performance characteristics of a DC machine.
3 Investigate a suitable DC machine based on its performance characteristics.
4 Apply the speed control techniques 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. Swinburne's test on DC Shunt machine.
6. Speed control methods of DC shunt motor.
7. Brake test on DC shunt motor.
8. Brake test on DC compound motor.
9. Separation of Losses in a DC Shunt Motor.
10. Fields Test on DC series machines.
11. Hopkinson's tests on DC shunt machines.
12. Retardation test on DC shunt motor.

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TECHNICAL SEMINAR

16AS3401

A Technical Seminar shall have two components, one chosen by the student from the course work as an extension and approved by the faculty supervisor. The other component is suggested by the supervisor and can be a reproduction of the concept in any standard research paper or an extension of concept from earlier course work. A hard copy of the information on seminar topic in the form of a report is to be submitted for evaluation along with presentation. The presentation of the seminar topics shall be made before a committee consisting of Head of the department, seminar supervisor and a senior faculty member. Each Technical Seminar shall be evaluated for 100 marks. Technical Seminar component-I for 50 marks and component-II for 50 marks making total 100 marks. (**Distribution of marks for 50:** 10 marks for report, 10 marks for subject content, 20 marks for presentation and 10 marks for queries).

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16AS3402 SOFT SKILLS PRACTICE

COURSE OUTCOMES:

At the end of the course students able to

1 Receive the support they need to resolve issues and make decisions.
2 Explore their personal resources and aptitudes.
3 Understand new career prospects and strive for personal development.
4 Make a proper and informed decision for their career.

1. Introduction - What are Soft Skills?

Importance of Soft Skills – Selling your soft skills – Attributes regarded as Soft Skills – Soft skills – Social soft skills – Thinking soft skills – Negotiating – Exhibiting your soft skills – Identifying your soft skills – improving your soft skills – will formal training enhance your soft skills – soft skills training – Train yourself – practicing soft skill – Measuring Attitude.

Activity: Measure your Soft Skill.

2. Know Thyself / Self – Discovery

Introduction – Importance of knowing yourself – Process of knowing yourself – SWOT analysis – Benefits of SWOT analysis – using of SWOT analysis – SWOT analysis grid – Questions to complete the grid.

Activity: Know yourself.

3. Developing Positive Attitude

Introduction – Meaning – Features of Attitude – Attitude and behavior – Formation of attitudes – change of attitudes – what can you do to change attitude ? Ways of changing attitude in a person – Attitude in a work place – The power of positive attitude – Developing positive attitude – Obstacles in developing positive attitude – Staying positive – Examples of positive attitude – positive attitude and its result – staying negative – examples of negative attitude – Overcoming negative attitude – Negative attitude and its results.

Activity: Measure your attitude.

4. Forming Values

Introduction – Meaning – What is a value? – A core of Values – Values relating to educations – Values relating to self and others – Values relating to Civic responsibilities – Values and attitudes – Importance of values – Formation of values – Types of Values – Terminal and

Instrumental Values – Power of Values – Personal Values – Cultural Values – Values – some examples.

Activity: Identity your values.

5. Improving Perceptions

Introduction – Meaning – Factors influencing Perception – Perceptual process – Improving perception – Perception and its application in organizations.

Activity: Test your Perception.

6. Career Planning

Introduction – Benefits of career planning – Guidelines for choosing a career – Myths about choosing a career – Tips for successful career planning – Developing career goals – Final thoughts on career planning – Things one should know while starting career and during his career.

Activity: Test your career interests.

7. Art of Listening

Introduction –What is Listening? – Two ears, one mouth – Benefits of active listening – kinds of listening – Factors that hamper listening – Common poor listening habits – Advantages of active listening – Listening tips.

Activity: Test your listening skills.

8. Art of Reading

Introduction – Reading is a Cognitive process – Good readers are what they read – Benefits of reading – Different types of reading – Tips for effective reading – The SQ3R Technique – Different stages of reading – Rates of reading – Determining a students' reading rate – Adjusting reading rate – Activities for increasing reading rate – Problems with reading – Becoming an effective reader.

Activity: Test your reading skills.

9. Body Language

Introduction – Body talk – Voluntary and involuntary body language – Forms of body language – Parts of body language – Origin of body language in building interpersonal relations – Reasons to study body language – Body language in building industrial relations – Improving body language – Types of body language – Gender differences – Female interest and body language – shaking hands with Women – Interpreting body language – Developing confidence with correct body language.

10. Team Building and Teamwork

Introduction – Meaning – Aspects of Team building – Skills needed for Team work – A model of team building – Team vs Group – Characterizer of effective team – Role of a team leader – nine persons a successful team should have – inter – group collaboration – Advantages of Inter-group collaboration – Differences faced in intergroup collaboration.

Activity: Test your team work skills.

11. Group Discussion

Introduction – Meaning of GD – Why Group Discussion – Charaters tested in a GD – Tips of GD – skills required in a GD – consequences of GD – Behaviour in a GD – Essential elements of GD – Traits tested in a GD – GD etiquette – Areas to be concentrated while preparing for a GD – Initiating a GD – Non-verbal communication in GD – Movement and Gestures to be avoided in a GD – Topics for GD.

Activity: Group Discussion.

12. Interview Skills

Introduction – Why an interview – Type of interview – Interview panel – Types of Questions asked – Reason for selecting a candidate – Reasons for selecting a candidate – Reasons for rejecting a candidate – on the day of interview – on to the interview table – attending job fair – common mistakes that you wouldn't want to do – question the candidate should not ask during the interview – pot interview etiquette – How does one follow-up? – Telephonic interview – Dress code at interview – Typical questions asked – Interview mistakes – quick tips – How to present well in interview – Tips to make a good impression in an interview – Job interview – Basic tips – How to search for job effectively – Interview quotations.

13. Time Management

Introduction – The 80:20 rule – Take a good look at the people around you – Examine your work – sense of time management – Time is money – Features of Time – Three secrets of time management – Time management matrix – Analysis of time matrix – Effective scheduling – Group of activities – Five steps to successful time management – difficulties in time management – Evil of not planning – time management is a myth – overcoming procrastination – ways to find free time – Time Management tips for students – Interesting facts about time – Ideal way of spending a day – time wasters – time savers – realizing the valve of time – time circle planner.

Activity: Test your time management skills.

14. Stress Management

Introduction – Meaning – At one level stress may be a positive aid to performance – At one level stress may be a negative aid to performance – Effects of stress – Kinds of stress – sources of stress – Few other common sources of stress case study – behaviors identified with

stress – Assessing the existence of stress – What are signs of stress? – Spotting stress in you – stress management tips : Teenage stress – Make the mornings memorable.

REFERENCE BOOKS:

1 Soft Skills : Life skills, Communication Skills, Employability skills and Corporate skills.
Authors : S. Hariharan, N. Sundararajan and S.P. Shanmugapriya
Publishers : MJP Publishers
2 Soft Skills : Know yourself and know the world.
Authors : Alex
Publishers : S Chand & Co., New Delhi.
3 Making work for highly sensitive person.
Authors : Bevertly Jaeger, Ph.D.
Publishers : Tata Mcgraw hill Education

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16AS3403 PROFESSIONAL SOCIETY ACTIVITIES-II

Professional Society Activities (PSA) course is aimed at enhancing the self learning, communication, managerial skills of the students by engaging them in various Co & Extra Curricular activities activities during their course of study. Activities in each of the department shall be designed and conducted by the Professional Society Executive Committee whose composition is:

1. Faculty Mentors- 2 No.
2. Student Chairman: 1 No.- Final year Student
3. Student General Secretary: 1 No.- Third year Student
4. Treasurer: 1 No.- Third year Student

Student Members: 2 No.s from each class

PSA related activities would be of the following nature but not limited to:

Activity#0 : Constitution of Student Body at respective departments & Inaugural Function

Activity#1 : Just A Minute

Activity#2 : Technical Quiz

Activity#3 : Open House- Lab Demo

Activity#4 : Technical Paper Presentation- Preliminary

Activity#5 : Technical Paper Presentation- Final

Activity#6 : Poster Presentation

Activity#7 : Collage- A theme based event

Activity#8 : Debate Competition

Activity#9 : Group Discussion Competition

Activity#10 : Mock Interviews

Activity#11 : Model Exhibition

Activity#12 : Valedictory Function

Composition of Professional Society Executive Committee:

6. Faculty Mentors- 2 No.
7. Student Chairman: 1 No.- Final year Student
8. Student General Secretary: 1 No.- Third year Student
9. Treasurer: 1 No.- Third year Student
10. Student Members: 2 No.s from each class