COURSE STRUCTURE AND SYLLABUS

For

B.Tech

ELECTRICAL AND ELECTRONICS ENGINEERING

(*Applicable for batches admitted from 2016-17*)

PRAGATI ENGINEERING COLLEGE

(AUTONOMOUS)

Permanently Affiliated to JNTUK, Kakinada, Accredited by NAAC with "A" Grade
Recognized by UGC 2(f) and 12(b) under UGC act, 1956
1-378, ADB Road, Surampalem – 533 437
Near Peddapuram, E.G.Dist, Andhra Pradesh

II Year – I Semester

S. No.	Subject Code	Subjects	L	T	P	C
1	16EE3T04	Network Theory -II	3	1	-	3
2	16EE3T05	Electrical Machines-I	3	1	-	3
3	16EE3T06	Electro Magnetic Fields	3	1	-	3
4	16EE3T07	Basic Electronics and Devices	3	1	-	3
5	16ME3T09	Thermal and Hydro Prime Movers	3	1	-	3
6	16BH3T14	Managerial Economics & Financial Analysis	3	1	-	3
7	16EE3L01	Networks Lab	-	-	3	2
8	16ME3L03	Thermal and Hydro Lab	-	-	3	2
Total Credits						**22**

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Department of Electrical and Electronics Engineering

L	T	P	C
3	1	0	3

II Year - I Semester

NETWORK THEORY – II (16EE3T04)

Preamble:
To enrich the students to acquire knowledge about the three phase systems, transient analysis, two port networks, network synthesis, Fourier series & Transforms and evaluating circuit performance by using SPICE.

Learning Objectives:
This course enables the students to
- Understand the three phase balanced circuits to get more power than single phase circuits.
- Understand the three phase unbalanced circuits to measure the power in different loading conditions.
- Study the transient behavior of electrical networks having dynamic elements with comprehension based on energy redistribution.
- Formulate two port networks, particularly in transmission lines and estimate the performance using other parameters.
- Study the design of circuit for the given excitation – response function..
- Understand the frequency domain behavior with periodic and aperiodic excitations by using Fourier series, Fourier transforms

UNIT-I : Steady State analysis of Balanced Three phase circuits
Phase sequence- star and delta connection - relation between line and phase voltages and currents in balanced systems - analysis of balanced three phase circuits - measurement of active and reactive power in balanced three phase systems. Analysis with PSPICE simulation.

UNIT-II : Steady State analysis of Unbalanced Three phase circuits
Analysis of three phase unbalanced circuits: Millman's method, Loop method – Star-Delta transformation technique, Two wattmeter method for measurement of three phase power. Analysis with PSPICE simulation.

UNIT-III : Transient Analysis in DC and AC circuits
Transient response of R-L, R-C, R-L-C circuits for DC and AC excitations, Solution using differential equations and Laplace transforms. Analysis with PSPICE simulation.

UNIT-IV : Two Port Networks
Two port network parameters – Z, Y, ABCD and hybrid parameters and their relations, Cascaded networks - poles and zeros of network functions. Network functions for the Two-Port bridged – T, Pie and Lattice networks. Analysis with PSPICE simulation.

UNIT-V : Network synthesis

Positive real function, Testing of driving point functions, even and odd functions - basic synthesis procedure - LC immittance functions - RC impedance functions and RL admittance function - RL impedance function and RC admittance function - Foster and Cauer methods. Analysis with PSPICE simulation.

UNIT-VI : Fourier analysis, Fourier Transforms

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 waveforms.

Fourier integrals and Fourier transforms – properties of Fourier transforms physical significance of the Fourier Transform and its application to electrical circuits. Analysis with PSPICE simulation.

Text Books:

1. Engineering Circuit Analysis by William Hayt and Jack E. Kemmerley, Mc Graw Hill Company, 6th edition.
2. Network synthesis: Van Valkenburg; Prentice-Hall of India Private Ltd.
3. A. Sudhakar, Shyammohan S. Palli, "Circuits and Networks Analysis and Synthesis", Second Edition, Tata McGraw-Hill, 2002.

References:

1. Introduction to circuit analysis and design by Tildon Glisson. Jr, Springer Publications.
2. Circuits by A. Bruce Carlson , Cengage Learning Publications.
3. Network Theory Analysis and Synthesis by Smarajit Ghosh, PHI publications.
4. Networks and Systems by D. Roy Choudhury, New Age International publishers.
5. Circuit Theory (Analysis and Synthesis) by A.Chakrabarthi, Dhanpat Rai&co.
6. John Bird, Electrical Circuit Theory and Technology, 3E, Elsevier, Gurgaon, India.
7. Spice for circuits and electronics using PSPICE by Muhammad H. Rashid, PHI publications.
8. Problems of Electrical Engineering by Parkers Smith,9th Edition.
9. http://nptel.ac.in/courses/108105065/4
10. www.electrical4u.com/network-synthesis-hurwitz-polynomial-positive-real-functions
11. www.calvin.edu/~svleest/circuitExamples/TransientAnalysis
12. https://en.wikipedia.org/wiki/SPICE

Learning Outcomes:

Students are able to

- Analyze the three phase balanced circuits to measure the power in power systems.
- Analyze the behavior of three phase unbalanced circuits.
- Find out transient response of electrical networks applied to power systems with different types of excitations.
- Estimate the parameters of different types of two port networks and interpret the relation among network parameters.
- Test the elementary synthesis procedure and design of various electrical networks.
- Extract different harmonics components from the response of a electrical network using Fourier series and Fourier transforms.

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II Year - I Semester	**3**	**1**	**0**	**3**

ELECTRICAL MACHINES - I (16EE3T05)

Preamble:
This is a basic course on electrical machines. This course covers the topics related to principles, performance, applications of transformers and dc machines.

Learning objectives:
This course enables the students to
- Determine the performance of single phase transformers with equivalent circuit models.
- Learn the testing methods of transformer and know its performance.
- Analyze the three phase transformers and achieve three phase to two phase conversion.
- Understand construction, principle of operation and performance of DC Generators.
- Learn the characteristics and performance of DC motors.
- Learn the methods of speed control and testing methods of DC motors.

UNIT–I : Single-phase Transformers -I
Types and constructional details - principle of operation - emf equation - operation on no load and on load – lagging, leading and unity power factors loads - phasor diagrams of transformers – equivalent circuit – regulation – losses and efficiency – effect of variation of frequency and supply voltage on losses – All day efficiency.

UNIT-II : Single-phase Transformers-II
Tests on single phase transformers – open circuit and short circuit tests – Sumpner's test – separation of losses – parallel operation with equal voltage ratios – auto transformer - equivalent circuit – comparison with two winding transformers.

UNIT- III : Three - Phase Transformers
Polyphase connections - Y/Y, Y/Δ, Δ/Y, Δ/Δ and open Δ - Third harmonics in phase voltages - three winding transformers: determination of Zp, Zs and Zt - transients in switching - off load and on load tap changers - Scott connection.

UNIT–IV: DC Generators
Construction and principle of operation of DC machine –EMF equation for generator –Classification of DC generators based on excitation – Characteristics of DC generators.

UNIT–V: D.C. Motors
Torque and back-emf equations of dc motors– Armature reaction and commutation – characteristics of shunt, series and compound motors - losses and efficiency- applications of dc motors.

UNIT-VI : Starting, Speed Control and Testing of D.C. Machines

Necessity of starter – Starting by 3 point starter, Speed control by armature voltage and field control - testing of DC machines - brake test, Swinburne's method – retardation test - principle of regenerative or Hopkinson's method–Field's test- separation of losses.

Text Books:

1. Electrical Machines – P.S. Bhimbra, Khanna Publishers
2. Electric Machinery by A.E.Fitzgerald,Charleskingsley,StephenD.Umans, TMH

Reference Books:

1. Electrical Machines by D. P.Kothari, I .J .Nagarth,McGrawHill Publications, 4th edition
2. Electrical Machines by R.K.Rajput, Lakshmi publications,5th edition.
3. Electrical Machinery by Abijith Chakrabarthi and SudhiptaDebnath,McGraw Hill education 2015
4. Electrical Machinery Fundamentals by Stephen J Chapman McGraw Hill education 2010.
5. Electric Machines by Mulukutla S. Sarma & Mukeshk. Pathak, CENGAGE Learning.
6. Theory & Performance of Electrical Machines by J. B. Guptha. S. K. Kataria& Sons
7. Electrical Machines by Ashfaq Hussain, Second Edition, Dhanapat Rai & Sons.
7. http://www.electrical4u.com/principle-of-dc-generator/
8. http://www.electricaleasy.com/2014/01/basic-working-of-dc-motor.html
9. http://www.electronics-tutorials.ws/transformer/transformer-basics.html
10. http://www.electrical4u.com/single-three-phase-transformer-vs-bank-of-three-single-phase-transformers/

Learning outcomes:

Students are able to

- Analyze the performance of single phase transformers.
- Analyze parallel operation of transformers, improve the load sharing capabilities and reliability.
- Analyze the equivalent circuits of three phase transformers for power system analysis.
- Analyze the characteristics and performance of DC generators.
- Choose the various types of DC motors for their particular application.
- Assess the performance of various DC machines.

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II Year - I Semester	**3**	**1**	**0**	**3**

ELECTRO MAGNETIC FIELDS (16EE3T06)

Preamble: Electromagnetic fields is the foremost pre-requisite course for most of the subjects in Electrical Engineering. This course introduces the concepts of electric field and magnetic fields and their applications which will be utilized in the development of the theory for power transmission lines and electrical machines.

Learning Objectives:
This course enables the students to

- Study the coordinate system and study the production of electric field and potentials due to different configurations of static charges.
- Understand the behavior of electrostatic fields in conductors and dielectrics.
- Study the magnetic fields produced by currents in different configurations.
- Understand the concepts of moving charges on magnetic fields.
- Identify the magnetic potential and its properties.
- Impart knowledge on concepts of Faraday's laws, induced emf.

UNIT – I : Electrostatics:
Orthogonal Coordinate Systems & Review of Vector Calculus: Rectangular, Cylindrical, Spherical coordinate systems. differential length, area and volume. Electrostatic Fields – Coulomb's Law – Electric Field Intensity (EFI) – EFI due to a line and a surface charge – Work done in moving a point charge in an electrostatic field – Electric Potential, Potential gradient – gauss's law in terms of (integral form and point form) Maxwell's first law, div(D)=ρv Laplace's and Poison's equations and Solution of Laplace's equation in one variable.

UNIT – II : Electrostatic Field in Materials:(Conductors – Dielectrics and Capacitance)
Electric dipole – Dipole moment – potential and EFI due to an electric dipole Torque on an Electric dipole in an electric field –Behaviour of conductors in an electric field – Conductors and Insulators Polarization – Boundary conditions between conduction to Dielectric and dielectric to dielectrics capacitance – capacitance of parallel plates, spherical and coaxial cables with composite dielectrics–Energy stored and energy density in a static electric field – Current density – conduction and Convection current densities–Ohm's law in point form – Equation of continuity-

UNIT – III : Magneto statics and Ampere's Law:
Static magnetic fields – Biot-Savart's law – Oesterd's experiment –Magnetic field intensity (MFI) – MFI due to a straight current carrying filament – MFI due to circular, square and solenoid current – Carrying wire – Relation between magnetic flux, magnetic flux density and MFI – Maxwell's second Equation, div(B)=0 –Ampere's circuital law and its applications comparison of electrostatics and Magnetostatics, MFI due to an infinite sheet of current and a long filament carrying conductor – Point form of Ampere's circuital law –Field due to a circular loop, rectangular and square loops, Maxwell's third equation, Curl (H)=J.

UNIT – IV : 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 – V : Self and Mutual inductance :

Scalar and vector magnetic potentials. Inductance and energy stored and density in a magnetic field. Self and Mutual inductance 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.

UNIT – VI : Time Varying Fields:

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

Text books:

1. Introduction to electro dynamics by D.J. Griffiths, Mc Graw Hill Publications.
2. Engineering Electro Magnetics by William H. Hayt Jr., Mc Graw Hill Publications.

References:

1. "Principles of Electro Magnetics" by Sadiku, Oxford Publications,4thedition.
2. "Electromagnetic Field Theory" by Yaduvir Singh, Pearson.
3. Fundamentals of Engineering Electromagnetics by Sunil Bhooshan, Oxford higher education.
4. Electro magnetism : Problems with solutions by Ashutosh Pramanik, PHI Publications.
5. https://onlinecourses.nptel.ac.in/noc16_ph03/preview
6. https://docs.google.com/file/d/0B21HoBq6u9TsZnQ5d2pEc2dxcnc/edit
7. http://bookboon.com/en/essential-electromagnetism-ebook
8. http://www.slideshare.net/kumar_vic/electromagnetic-theory
9. http://ecee.colorado.edu/~bart/book/book/intro/intro0.htm

Learning Outcomes:

Students are able to

- Understand the coordinate system and learn mathematical operations related to fields.
- Understand the properties of materials under the influence of electric field.
- Understand Biot-Savart's Law and Ampere's Circuital law and applications of these laws in analyzing magnetic fields.
- Calculate the magnetic forces and torque produced by currents in magnetic fields.
- Understand the magnetic potential, calculate self and mutual inductances and the energy stored in the magnetic field .
- Know the time varying fields and get ability to calculate induced emf.

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II Year - I Semester	**3**	**1**	**0**	**3**

BASIC ELECTRONICS AND DEVICES (16EE3T07)

Preamble: This course introduces the concepts of semi-conductor physics and operation of various semi-conductor devices. Realization of rectifiers, amplifiers and oscillators using semi-conductor devices and their analysis is also introduced in this course.

Learning Objectives:
This course enables the students

- To learn the basics of semiconductor physics.
- To study the construction details, operation and characteristics of various semiconductor diodes.
- To understand the operation and analysis of rectifiers with and without filters, further study the operation of series and shunt regulators using Zener diodes
- To study the characteristics of different bipolar junction transistors and their biasing stabilization and compensation techniques. To analyze transistor amplifiers using h-parameters.
- To understand the basics of Thyristors, Power IGBTs and Power MOSFETs.
- To understand the concepts of positive and negative feedbacks and their role in amplifiers and oscillators.

UNIT-I Review of Semi Conductor Physics: Insulators, Semi conductors, and Metals classification using Energy Band Diagrams, Mobility and Conductivity, Electrons and holes in Intrinsic Semi conductors, Extrinsic Semi Conductor, (P and N Type semiconductor) Hall effect, Generation and Recombination of Charges, Diffusion, Continuity Equation, Injected Minority Carriers, Law of Junction, Introduction to fermi level in Intrinsic, Extrinsic semi conductors with necessary mathematics characteristic, Temperature dependence on V-I characteristics, Transition and Diffusion capacitances.

UNIT-II Junction Diode Characteristics
Operation and characteristics of p-n junction diode. Current components in p- n diode, diode equation. Temperature dependence on V–I characteristic, diffusion capacitance and diode resistance (static and dynamic), energy band diagram of p-n diode. Special Diodes: Avalanche and Zener break down, Zener characteristics, tunnel diode, characteristics with the help of energy band diagrams, Varactor diode, LED, Photo diode.

UNIT-III Rectifiers and Regulators
Half wave rectifier, ripple factor, full wave rectifier (with and without (transformer), harmonic components in a rectifier circuit, inductor filter, capacitor filter, L-section filter, Π- section filter, and comparison of various filter circuits in terms of ripple factors. Simple circuit of a regulator using Zener diode. Types of regulators-series and shunt voltage regulators, over load voltage protection. Compensation techniques

UNIT-IV : Transistors

Junction transistor, transistor current components, transistor as an amplifier and switch. Characteristics of transistor (CE, CB and CC configurations). Transistor biasing and thermal stabilization (to fixed bias, collector to base bias, self bias). Compensation against variation in base emitter voltage and collector current. Thermal runaway. Hybrid model of transistor. Analysis of transistor amplifier using h-parameters-

FET: JFET Characteristics, Low frequency model of FET, FET as an amplifier.

UNIT-V Power semiconductor devices

Principle of operation and characteristics of Thyristors, Silicon control rectifiers, power IGBT and power MOSFET their ratings. Comparison of power devices.

MOFET Characteristics–static and Transfer (enhancement and depletion mode). Characteristics of UJT.

UNIT-VI Amplifiers and oscillators:

Feedback Amplifiers -classification, feedback concept, transfer gain and general characteristics of negative feedback amplifiers, effect of feedback on input and output resistances. Methods of analysis of feedback amplifiers.

Power Amplifiers – Classification, push-pull amplifiers, Introduction to harmonics (distortion factor).

Oscillators – Condition for oscillation, RC-phase shift oscillator. Wien bridge oscillator, Crystal oscillator. Frequency and amplitude stability of oscillators.

Text Books:

1. Electronic Devices and Circuits – J. Millman, C.C. Halkias, Tata Mc-Graw Hill.
2. Electronic Devices and Circuits – Balbir Kumar, Shail B. Jain, Second Edition, PHI.

References:

1. Electronic Devices and Circuits by David A. Bell, Oxford University Press.
2. Electronic Devices and Circuits – Salivahanan, Kumar, Vallavaraj, TATA Mc Graw Hill, Second Edition.
3. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, Pearson/Prentice Hall, 9thEdition, 2006.
4. Theodore F. Bogart Jr., Jeffrey S. Beasley, Guillermo Rico, Electronic devices and circuits,PPH,2004.
5. http://nptel.ac.in/courses/117103063/
6. http://www.electronics-tutorials.ws/
7. http://www.electronicshub.org/tutorials/

Learning Outcomes:

Students are able to

- Understand the basic concepts of semiconductor physics, which are useful to understand the operation of diodes and transistors
- Explain the operation and characteristics of PN junction diode and special diodes.
- Understand operation and design aspects of rectifiers and regulators.
- Understand the characteristics of various transistor configurations. They become familiar with different biasing, stabilization and compensation techniques used in transistor circuits.
- Understand the operation and characteristics of Thyristors, Power IGBTs and Power MOSFETs.
- Understand the merits and demerits of positive and negative feedback and the role of feedback in oscillators and amplifiers.

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II Year - I Semester	**3**	**1**	**0**	**3**

THERMAL AND HYDRO PRIME MOVERS (16ME3T09)

Course Objectives:

The objectives of the course are to make the students understand the various types of prime movers which can be connected to generators for power production, to impart the knowledge of various types of pumps.

Course outcomes:

Upon completion of this course the student will be able to describe the basic components of steam power plants and working principles of different types of steam turbines, able to explain the working principle of different types of gas turbines, able to identify the main components of diesel power plant and explain the working principle of diesel engines, able to discuss the working principle of different types of hydraulic turbines, able to illustrate the working principle of centrifugal and reciprocating pumps

PART-A: THERMAL PRIMEMOVERS

UNIT – I

Learning Objective: To impart the knowledge on I.C. Engines which can be connected to generators for power production and obtain the skills of performing the necessary calculations with respect to the functioning of the I.C. Engines.

IC ENGINES: Classification, working principles valve and port timing diagrams - air standard – cycles Engine systems: fuel injection, carburetion, ignition, cooling and lubrication – Engine performance evaluation.

Learning Outcome: The student able to understand the constructional features, operational details of various types of internal combustion engines through the details of several engine systems and the basic air standard cycles that govern the engines. Further, the student shall be able to calculate the performance of different types of internal combustion engines.

UNIT – II

Learning Objective: The students learn the basics of thermodynamics and to train the student in the aspects of steam formation and its utilities through the standard steam data tables and charts. To make the student correlate between the air-standard cycles and the actual cycles that governs the steam turbines. To train the student to calculate the performance of steam turbines using velocity diagrams.

BASICS OF THERMODYNAMICS: Thermodynamic Systems and State, Process, and Cycle. Laws of thermodynamics(statements only)- First Law of Thermodynamics and Analysis of Various Thermodynamic Processes; study state energy balance equation.

STEAM PROPERTIES: Properties of steam use of steam tables by using temperature to entropy and enthalpy- entropy diagrams.

VAPOR POWER CYCLES: Carnot Cycle-Rankine Cycle- Thermodynamic Variables Effecting Efficiency and Output Of Rankine Cycle Analysis Of Simple Rankine Cycle And Re-Heat Cycle.

STEAM TURBINES: Schematic Layout Of Steam Power Plant Classification Of Steam Turbines- Impulse Turbine And Reaction Turbine- Compounding In Turbines- Velocity Diagrams For Simple Impulse.Work Done & Efficiency.(Taken from JNTU.K R13)

Learning Outcome:After completion of the unit the student able to understand the basics of thermodynamics, quality of steam and calculating performance of the simple steam power plant and steam turbines.

UNIT – III

Learning Objective: To impart the knowledge of gas turbine fundamentals, the governing cycles and the methods to improve the efficiency of gas turbines.

GAS TURBINES: Simple gas turbine plant-ideal cycle, closed cycle -open cycle-Efficiency, Work ratio and optimum pressure ratio for simple gas turbine cycle. Actual cycle, analysis of simple cycles & cycles with inter cooling, reheating and Regeneration.

Learning Outcome: The student able to understanding the basic principle operations and also calculate the efficiencies for different gas power plants.

PART-B: HYDRO PRIMEMOVERS

UNIT – IV

Learning Objective: To teach the student about the fundamental of hydraulics and properties of fluids, fluid dynamic and equations. Also to impart the knowledge on impact of jets.

PROPERTIES OF FLUIDS: Density, Specific Weight, Specific Volume, Specific Gravity, Viscosity, Surface Tension and Capillarity. Simple problems

IMPACT OF JETS : Impulse momentum equation, Impact of Jet on stationary vanes (flat and curved), And Impact of Jet on moving vanes (flat and curved).

Learning Outcome: The student able to solve problem on fluid properties and also calculate the impact forces developed on different vanes by a jet.

UNIT – V

Learning Objective: To make the student learn about the constructional features, operational details of various types of hydraulic turbines and governing of turbines. Also learn site selection for hydraulic power plant.

HYDRAULIC TURBINES: Classification of turbines; Working principle, Efficiency calculation and Design principles for Pelton Wheel, Francis and for Kaplan turbines; Performance equations of turbine; Governing of turbines; site selection and layout of Hydro- electric power plant; Components of Hydro- electric power plant.

Learning Outcome: The student shall be able to calculate the performance of hydraulic turbines, site selection and main components.

UNIT – VI

Learning Objective: To impart the knowledge of various types of pumps, their constructional features, working and performance.

HYDRAULIC PUMPS

Centrifugal pumps: Types of pumps, Main components, working principle, Multi stage pumps, Performance and characteristic curves.

Reciprocating pumps: Types of pumps, main components working principle, performance single acting double acting reciprocating pumps, Performance and characteristic curves.

Learning Outcome: After completion of unit the student able to understand the working principle of different types of pumps and also learned performance evolution for different types of pumps.

TEXT BOOKS:

1. Thermal Engineering by Rajput, Lakslunipublications
2. A text book of Fluid mechanics and hydraulic machines by Rajput, Lakslunipublications

REFERENCE BOOKS:

1. Thermal engineering by M.L.Mathur and F.S.Mehta, JainBrothers.
2. "Hydraulics & Fluid Mechanics", P.N. Modi and S.M. Seth, (Standard book) House,
3. "Fluid Mechanics & Hydraulic Machinery" A.K.Jain, Khanna Publishers,Delhi.
4. "Fluid Mechanics" by Victor.L.Streeter
5. "Introduction to Fluid Mechanics" Edward .J. ShaughnessyJr.
6. "Fluid Mechanics & Its Applications", Vijay Gupta,Santhosh.k.Gupta
7. http://nptel.ac.in/courses/112105123/
8. http://nptel.ac.in/courses/112108148/
9. http://nptel.ac.in/courses/112104113/
10. http://nptel.ac.in/courses/112104033/
11. http://nptel.ac.in/courses/112104118/
12. http://nptel.ac.in/courses/112105171/

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MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS (16BH3T14)

Unit – I

Introduction to Managerial Economics and demand Analysis:

Definition of Managerial Economics and Scope-Managerial Economics and its relation with other subjects-Basic Economic Tools used in Managerial Economics-Concepts of Demand-Types-Determinants-Law of Demand its Exception-Elasticity of Demand-Types and Measurement- Law of Supply -Demand forecasting and it's Methods.

Unit – II

Production and Cost Analysis:

Production function – Isoquants and Isocosts-Law of Variable proportions- Laws of Returns to Scale-Cobb-Douglas Production function-Economies of Scale-Cost Concepts- Fixed vs Variable Costs-Out of Pocket Costs vs Imputed Costs-Cost Volume Profit analysis- Determination of Break-Even Point (Simple Problems)

Unit – III

Introduction to Markets, Theories of the Firm & Pricing Policies:

Market Structures: Perfect Competition, Monopoly and Monopolistic and Oligopoly – Features – Price, Output Determination – Managerial Theories of firm: Marris and Williamson's models – Methods of Pricing: Limit Pricing, Market Skimming Pricing, Internet Pricing: Flat Rate Pricing, Usage sensitive, Transaction based pricing, Priority Pricing.

Unit – IV

Types of Business Organization and Business Cycles:

Features and Evaluation of Sole Trader – Partnership – Joint Stock Company – State/Public Enterprises and their forms – Business Cycles – Meaning and Features – Phases of Business Cycle.

Unit – V

Introduction to Accounting:

Introduction to Double Entry Systems-Journal-Ledger- Trail Balance - Preparation of Financial Statements - Analysis and Interpretation of Financial Statements-Ratio Analysis – liquidity ratios, profitability ratios, solvency ratios, turnover ratios – Preparation of the Funds flow Statement (Simple Problems)

Unit – VI

Capital and Capital Budgeting: Capital Budgeting: Meaning of Capital-Capitalization- Sources of Finance (with special reference to Shares and Debentures)-Meaning of Capital Budgeting-Need for Capital Budgeting – Techniques of Capital Budgeting- Traditional and Modern Methods.

TEXT BOOKS:

1. Dr. N. Appa Rao, Dr. P. Vijay Kumar: 'Managerial Economics and Financial Analysis', Cengage Publications, New Delhi – 2011
2. Dr. A. R. Aryasri – Managerial Economics and Financial Analysis, TMH 2011
3. Prof. J.V.Prabhakara rao, Prof. P. Venkatarao. 'Managerial Economics and Financial Analysis', Ravindra Publication.

REFERENCES:

1. V. Maheswari: Managerial Economics, Sultan Chand.
2. Suma Damodaran: Managerial Economics, Oxford 2011.
3. Dr. B. Kuberudu and Dr. T. V. Ramana: Managerial Economics & Financial Analysis, Himalaya Publishing House 2011.
4. Vanitha Agarwal: Managerial Economics, Pearson Publications 2011.
5. Sanjay Dhameja: Financial Accounting for Managers, Pearson.
6. Maheswari: Financial Accounting, Vikas Publications.
7. S. A. Siddiqui & A. S. Siddiqui: Managerial Economics and Financial Analysis, New Age International Publishers, 2012

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	L	T	P	C
II Year - I Semester	**0**	**0**	**3**	**2**

NETWORKS LAB (16EE3L01)

Learning Objectives:

To verify and demonstrate various theorems, locus diagrams, resonance and two port networks. To determine MMF, Reluctance, self and mutual inductance of a magnetic circuit, time constant of RL and RC circuits, measurement of 3- phase power.

ANY TEN OF THE FOLLOWING EXPERIMENTS ARE TO BE CONDUCTED

1. Simulation of AC & DC circuits.
2. Verification of Thevenin's and Norton's Theorems.
3. Verification of Superposition theorem and Maximum Power Transfer Theorem.
4. Verification of Compensation Theorem.
5. Verification of Reciprocity, Millman's Theorems.
6. Locus Diagrams of RL and RC Series Circuits.
7. Series and Parallel Resonance.
8. Determination of Self, Mutual Inductances and Coefficient of coupling.
9. Z and Y Parameters.
10. Time response of RL & RC series circuits.
11. Measurement of three phase active power using two wattmeter method for balanced and unbalanced loads.
12. Determination of MMF for maximum flux density and Reluctance of a transformer core.

Learning outcomes:

Able to apply various theorems applied to electrical circuits, Determination of MMF, Reluctance, self and mutual inductances, two port parameters of a given electric circuits, time constant of RL and RC circuits and measurement of 3- phase power.

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	L	T	P	C
II Year - I Semester	**0**	**0**	**3**	**2**

THERMAL AND HYDRO LAB (16ME3L03)

Course Objective:

To impart practical knowledge on the performance evaluation methods of various internal combustion engines, flow measuring equipment and hydraulic turbines and pumps.

Course Outcome:

The student able to evaluate the performance of various internal combustion engines, flow measuring equipment and hydraulic turbines and pumps.

SECTION-A:

THERMAL ENGINEERING LAB

1. I.C. Engines valve / port timing diagrams.
2. Engines performance test on 4 -stroke Diesel engine.
3. I.C. Engines performance test on 2-stroke petrol engine.
4. Evaluation of engine friction by .conducting Morse test on 4-stroke multi cylinder petrol engine.
5. Determination of PHP by retardation and motoring test on IC engine
6. I.C. Engines heat balance on petrol / Diesel engines.
7. Economical speed test of an IC engine
8. Study of boilers

SECTION- B :

HYDRAULIC MACHINES LAB

1. Impact of jets on Vanes.
2. Performance Test on Pelton Wheel.
3. Performance Test on Francis Turbine.
4. Performance Test on Single Stage Centrifugal Pump.
5. Performance Test on Reciprocating Pump.
6. Calibration of Venturi meter.
7. Calibration of Orifice meter.
8. Determination of loss of head due to sudden contraction in a pipeline.

Note: To conduct a minimum of 12 experiments by conducting a minimum of six from each section.