



Shri Balasaheb Mane Shikshan Prasarak Mandal's

# ASHOKRAO MANE GROUP OF INSTITUTIONS

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**NBA accredited Programs\* | Accredited by NAAC with 'A' Grade (CGPA 3.08)**

## DEPARTMENT OF ELECTRICAL ENGINEERING

### Course Outcomes A.Y.2022-23

#### SY B. Tech. (Odd Semester)

1	Engineering Mathematics-III	<p>Understand the properties of Laplace transform and evaluate transform of integral &amp; derivative functions.</p> <p>Solve inverse Laplace transform using partial fraction &amp; convolution theorem.</p> <p>Determine Fourier Sine &amp; Fourier Cosine integrals.</p> <p>Study partial differential equations along with applications.</p> <p>Study analytic functions, Cauchy Riemann equations and Cauchy integral Formula &amp; Cauchy's residue theorem.</p>
2	Electrical Machines-I	<p>Understand and classify different parts of a transformer &amp; understand its operation.</p> <p>Analyse 1-Ph and 3-Ph transformers circuits.</p> <p>Identify different parts of a DC machine &amp; understand its operation.</p> <p>Interpret different testing methods to determine the efficiency of DC machines.</p> <p>Analyse the starting and speed control methods of a DC machines.</p>
3	Engineering Material Science	<p>Study about Crystal structures.</p> <p>Understand magnetic material structure.</p> <p>Study about conducting and superconducting materials.</p> <p>Study about semiconducting materials.</p> <p>Study dielectric and Nano materials.</p>
4	Basic Human Rights	<p>Understand importance of human life &amp; Realize the Human rights and Duties.</p> <p>Understand about the society, religion, culture of human life</p> <p>Evaluate the social structure and problems.</p> <p>Recognize about the freedom, liberty and democracy of human being.</p> <p>Identify about the Human rights law, constitution of India.</p>
5	Electrical and Electronics Measurement	<p>Classify various types of errors is the system and types of electrical measuring instruments</p> <p>Explain different types of meters required for electrical quantities.</p> <p>Determine unknown variables in the bridge configuration with the help of other known variables.</p> <p>Recognize basic measuring instruments used for digital measurements and to explain them.</p> <p>Define the term transducers and to classify and explain various types of transducers.</p>

**SY B.Tech. (Even Semester)**

<b>Sr. No.</b>	<b>Name of Subject</b>	<b>Course Outcome</b>
1	Electrical Machine-II	Understand construction & operating principle of 1 phase transformer. Working and construction of 3 phase transformer. Understand operating principle of DC generators and DC motors. Analyze the operating principles of DC motors. Understand special Motors.
2	Power System-I	Explain the generation of Electric Energy by different sources. Discuss the Electrical design aspects of overhead transmission line. Discuss the Mechanical design aspects of overhead transmission line. Analyze Performance of transmission line. Describe the basic structure of power system distribution and its components
3	Electronic Devices and Circuits	Understand the concept of Bipolar Junction Transistor. Understand the concept of JET and MOSFET. Understand the concept of Power Amplifiers. Understand the concept of Feedback Amplifier. Understand the concept of Regulated Power Supply.
4	Network Theory	Review basic components of electric network. Design and develop network equations and their solutions. Apply Laplace theorem for Electric Network Analysis. Analyze Two port networks. Analyze AC circuits.
5	Analog and Digital Electronics	Study transistor and op-amp. Review basic number system. Understand design and characteristics of digital logic gates. Compare different techniques in use of digital circuits. Study combinational and sequential circuits.

**TY B. Tech. (Odd Semester)**

<b>Sr. No.</b>	<b>Name of Subject</b>	<b>Course Outcomes</b>
1	Power System Analysis	To study different parameters of power system operation and control To study load flow and Diff. methods of reactive power control. To understand different methods of fault analysis and stability study.
2	Power Electronics	Review principle of construction, operation and characteristics of basic Semiconductor devices. Understand and analyze performance of controlled and uncontrolled converters. Understand and analyze performance of DC to DC converters. DC to AC converters. Understand and analyze performance of AC voltage controllers. Understand AC to AC Power conversion using choppers and cyclo-converters.
3	Microprocessor and micro Controller	Study the architecture of 8085. Understand interfacing of 8085 and 8051. Understand interrupt features of 8085 and 8051. To develop program for basic applications. Understand typical applications of 8085 & 8051
4	HVDC	Understand importance, configuration & types of HVDC transmission. Understand benefits, roles & realities of types of FACTS controllers. Analyze the reactive power control and VAR sources. Analyze the operation of variable impedance type series compensator. Understand types of STATCOM and working of UPFC.
5	Elective-II (Embedded system)	Understand the Embedded System Design. Understand working and applications of Sensor and Actuator. Understand Real time operating systems. Understand the Embedded Systems Architecture and working. Understand different Embedded Networks.

**TY B. Tech. (Even Semester)**

Sr. No.	Name of Subject	Course Outcome
1	Switch Gear and Protection	Understand the concept of protective relay Understand the concept of static and Numerical Relay Understand the concept of Circuit breaker and Fuses Understand the concept of protection of Transmission Line Understand the concept of protection of Transformer and Alternator Protection
2	Principles of Electrical Machine Design	Explain principles of electric machine design. Explain different types of electrical apparatus Describe types and parameters of AC and DC windings Explain Heating, Cooling and Ventilation for electrical machine Design Transformer for different ratings
3	Control System	To know different basic concepts and components of a control system. To derive transfer functions of basic control system components. To perform stability analysis using time domain response on a given system. To design and analyze PID controller. To understand and analyze state variable technique.
4	FACTS	Understand importance, configuration & types of HVDC transmission. Understand benefits, roles & realities of types of FACTs controllers. Analyze the reactive power control and VAR sources. Analyze the operation of variable impedance type series compensator. Understand types of STATCOM and working of UPFC.
5	PPE	To review basic components of power system, energy sources. To understand principle of construction and operation of different conventional power plants.

**Final Year B. Tech. (Odd Semester)**

Sr. No.	Name of Subject	Course Outcome
1	Power System Operation & Control	<p>Explain the fundamental concept of power system.</p> <p>Design the mathematical model of synchronous machine.</p> <p>Design the mathematical model Excitation system and speed governing system.</p> <p>Analyze the transient stability of power system using swing equation and equal area criteria.</p> <p>Analyze the economic operation of power system.</p>
2	High Voltage Engineering	<p>Illustrate the concept of electric field stresses, applications of insulating materials</p> <p>Explain the breakdown process in solid, liquid, and gaseous materials.</p> <p>Analyze methods for generation and measurement of High Voltages and Currents (both ac and dc)</p> <p>Describe the phenomenon of overvoltage and choose appropriate insulation coordination levels based on IS &amp; IEC Standards.</p> <p>Understand the methods for Nondestructive testing of equipment like transformers, insulators, isolators, bushings, lightning arrestors, cables, circuit breakers and surge diverters</p>
3	Electrical Drives	<p>Examine various applications in industrial and domestic areas where use of electric drives are essential.</p> <p>Classify types of electric drives systems based on nature of loads, control objectives, performance and reliability.</p> <p>Combine concepts of previously learnt courses such as, electrical machines, Control and power electronics to cater to the need of automations in industries.</p> <p>Select most suitable type and specification of motor drive combination for efficient conversion and control of electric power.</p> <p>Identify the critical areas in application levels, and derive typical solutions.</p>
4	Elective-IX(ETU)	<p>Identify types of Traction system.</p> <p>Interpret various power supply in electric traction.</p> <p>Analyze various traction motors &amp; Traction motor control.</p> <p>Elaborate train movement &amp; breaking in traction system.</p> <p>Classify the indoor and outdoor Illumination system.</p>
5	Elective-X (EAC)	<p>To understand the basic process involved in the energy audit and the terminologies associated in the process.</p> <p>To be able to develop audit reports of any firm including large and small scale industries, residential and commercial establishments.</p> <p>To select and comment on the appropriate method for the planning and monitoring of any energy conservation project.</p> <p>To analyze various energy conservation in generation, transmission, distribution to get knowledge about Planning, Implementation &amp; monitoring of energy conservation project</p>

**Final Year B. Tech. (EVEN Semester)**

<b>Sr. no</b>	<b>Name of Subject</b>	<b>Course Outcome</b>
1	IOT and Industry 4.0	Understand sensors, actuators, communication and Networking. Understand Cyber Physical Systems and Cyber security in Industry 4.0. Knowledge of theory related to Industrial IoT Systems Ability to implement real case studies by gained knowledge of Industrial applications with IoT capability
2	Entrepreneurship Essentials	Analyze the data, information and knowledge. Define the concept of marketing. Identify project and work for community development. Analyze the business model.

**Prof. S. H. Shete (HOD)**