



Shri Balasaheb Mane Shikshan Prasarak Mandal's

# ASHOKRAO MANE GROUP OF INSTITUTIONS

NH – 4, Vathar Tarf Vadgaon, Tal: -Hatkanangale, Dist: - Kolhapur-416112

E-mail: [hodele@amgoi.edu.in](mailto:hodele@amgoi.edu.in), Website: [www.amgoi.org](http://www.amgoi.org)

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## DEPARTMENT OF ELECTRICAL ENGINEERING

### Course Outcomes A.Y.2024-25

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

Sr. No.	Name of Subject	Course Outcome
1	Engineering Mathematics III	<ul style="list-style-type: none"><li>✓ Understand the properties of Laplace transform and evaluate transform of integral &amp; derivative functions.</li><li>✓ Solve inverse Laplace transform using partial fraction &amp; convolution theorem.</li><li>✓ Determine Fourier Sine &amp; Fourier Cosine integrals.</li><li>✓ Study partial differential equations along with applications</li><li>✓ Study analytic functions, Cauchy Riemann equations, Cauchy integral Formula &amp; Cauchy's residue theorem</li></ul>
2	Electrical Machines I	<ul style="list-style-type: none"><li>✓ Understand and classify different parts of a transformer &amp; understand its operation.</li><li>✓ Analyze 1-Ph and 3-Ph transformers circuits.</li><li>✓ Identify different parts of a DC machine &amp; understand its operation.</li><li>✓ Interpret different testing methods to determine the efficiency of DC machines.</li><li>✓ Analyze the starting and speed control methods of a DC machines.</li></ul>
3	Engineering Material Science	<ul style="list-style-type: none"><li>✓ Study about Crystal structures.</li><li>✓ Understand magnetic material structure.</li><li>✓ Study about conducting and superconducting materials.</li><li>✓ Study about semiconducting materials</li><li>✓ Study dielectric and nano materials.</li></ul>
4	Basic Human Rights	<ul style="list-style-type: none"><li>✓ Understand importance of human life &amp; Realize the Human rights and Duties.</li><li>✓ Understand about the society, religion, culture of human life</li><li>✓ Evaluate the social structure and problems.</li><li>✓ Recognize about the freedom, liberty, democracy of human being.</li><li>✓ Identify about the Human rights law, constitution of India.</li></ul>
5	Electrical and Electronics Measurement	<ul style="list-style-type: none"><li>✓ Classify various types of errors in the system and types of electrical measuring instruments</li><li>✓ Explain different types of meters required for electrical quantities.</li><li>✓ Determine unknown variables in the bridge configuration with the help of other known variables.</li><li>✓ Recognize basic measuring instruments used for digital measurements and to explain them.</li><li>✓ Define the term transducers and to classify and explain various types of transducers</li></ul>



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## DEPARTMENT OF ELECTRICAL ENGINEERING

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

Sr. No.	Name of Subject	Course Outcome
1	Electrical Machine-II	<ul style="list-style-type: none"><li>✓ Understand construction &amp; operating principle of 1 phase transformer.</li><li>✓ Working and construction of 3 phase transformer.</li><li>✓ Understand operating principle of DC generators and DC motors.</li><li>✓ Analyze the operating principles of DC motors.</li><li>✓ Understand special Motors.</li></ul>
2	Power System-I	<ul style="list-style-type: none"><li>✓ Explain the generation of Electric Energy by different sources</li><li>✓ Discuss the Electrical design aspects of overhead transmission line</li><li>✓ Discuss the Mechanical design aspects of overhead transmission line</li><li>✓ Analyze Performance of transmission line</li><li>✓ Describe the basic structure of power system distribution and its components</li></ul>
3	Group A (Electronic Devices and Circuits)	<ul style="list-style-type: none"><li>✓ Understand the concept of Bipolar Junction Transistor</li><li>✓ Understand the concept of JET and MOSFET</li><li>✓ Understand the concept of Power Amplifiers</li><li>✓ Understand the concept of Feedback Amplifier</li><li>✓ Understand the concept of Regulated Power Supply</li></ul>
4	Network Theory	<ul style="list-style-type: none"><li>✓ Review basic components of electric network.</li><li>✓ Design and develop network equations and their solutions.</li><li>✓ Apply Laplace theorem for Electric Network Analysis.</li><li>✓ Analyze Two port networks.</li><li>✓ Analyze AC circuits.</li></ul>
5	Analog and Digital Electronics	<ul style="list-style-type: none"><li>✓ Study transistor and op-amp.</li><li>✓ Review basic number system.</li><li>✓ Understand design and characteristics of digital logic gates.</li><li>✓ Compare different techniques in use of digital circuits.</li><li>✓ Study combinational and sequential circuits.</li></ul>



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## DEPARTMENT OF ELECTRICAL ENGINEERING

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

Sr. No.	Name of Subject	Course Outcome
1	Power System Analysis	<ul style="list-style-type: none"><li>✓ Study different parameters of power system operation and control</li><li>✓ Study load flow and Diff. methods of reactive power control.</li><li>✓ Understand diff. methods of fault analysis and stability study</li></ul>
2	Power Electronics	<ul style="list-style-type: none"><li>✓ Review principle of construction, operation and characteristics of basic semiconductor devices.</li><li>✓ Understand and analyze performance of controlled and uncontrolled converters.</li><li>✓ Understand and analyze performance of DC to DC converters. DC to AC converters.</li><li>✓ Understand and analyze performance of AC voltage controllers.</li><li>✓ Understand AC to AC Power conversion using choppers and Cycloconverters.</li></ul>
3	Microprocessor and micro Controller	<ul style="list-style-type: none"><li>✓ Study the architecture of 8085.</li><li>✓ Understand interfacing of 8085 and 8051.</li><li>✓ Understand interrupt features of 8085 and 8051.</li><li>✓ Develop program for basic applications.</li><li>✓ Understand typical applications of 8085 &amp; 8051</li></ul>
4	Group B (HVDC)	<ul style="list-style-type: none"><li>✓ Understand importance, configuration &amp; types of HVDC transmission.</li><li>✓ Understand benefits, roles &amp; realities of types of FACTS controllers.</li><li>✓ Analyze the reactive power control and VAR sources.</li><li>✓ Analyze the operation of variable impedance type series compensator.</li><li>✓ Understand types of STATCOM and working of UPFC.</li></ul>
5	Group C (Embedded System)	<ul style="list-style-type: none"><li>✓ Understand the Embedded System Design.</li><li>✓ Understand working and applications of Sensor and Actuator.</li><li>✓ Understand Real time operating systems.</li><li>✓ Understand the Embedded Systems Architecture and working.</li><li>✓ Understand different Embedded Networks.</li></ul>



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## DEPARTMENT OF ELECTRICAL ENGINEERING

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

Sr. No.	Name of Subject	Course Outcome
1	Switch Gear and Protection	<ul style="list-style-type: none"><li>✓ Understand the concept of protective relay</li><li>✓ Understand the concept of static and Numerical Relay</li><li>✓ Understand the concept of Circuit breaker and Fuses</li><li>✓ Understand the concept of protection of Transmission Line</li><li>✓ Understand the concept of protection of Transformer and Alternator Protection</li></ul>
2	Electrical Machine Design	<ul style="list-style-type: none"><li>✓ Explain principles of electric machine design.</li><li>✓ Explain different types of electrical apparatus</li><li>✓ Describe types and parameters of AC and DC windings</li><li>✓ Explain Heating, Cooling and Ventilation for electrical machine</li><li>✓ Design Transformer for different ratings</li></ul>
3	Control System	<ul style="list-style-type: none"><li>✓ Study the different basic concepts and components of a control system.</li><li>✓ Derive transfer functions of basic control system components.</li><li>✓ Analyze stability analysis using time domain response on a given system.</li><li>✓ Design and analyze PID controller.</li><li>✓ Understand and analyze state variable technique.</li></ul>
4	Group D (FACTS)	<ul style="list-style-type: none"><li>✓ Understand benefits, roles &amp; realities of types of FACTS controllers.</li><li>✓ Analyze the reactive power control and VAR sources.</li><li>✓ Analyze the operation of variable impedance type series compensator.</li><li>✓ Understand types of STATCOM and working of UPFC.</li></ul>
5	Group E (Power Plant Engineering)	<ul style="list-style-type: none"><li>✓ Review basic components of power system, energy sources.</li><li>✓ Understand principle of construction and operation of different conventional power plants</li></ul>



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## DEPARTMENT OF ELECTRICAL ENGINEERING

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

Sr. No.	Name of Subject	Course Outcome
1	Power System Operation & Control	<ul style="list-style-type: none"><li>✓ Explain the fundamental concept of power system.</li><li>✓ Design the mathematical model of synchronous machine.</li><li>✓ Design the mathematical model Excitation system and speed governing system.</li><li>✓ Analyze the transient stability of power system using swing equation and equal area criteria.</li><li>✓ Analyze the economic operation of power system.</li></ul>
2	High Voltage Engineering	<ul style="list-style-type: none"><li>✓ Illustrate the concept of electric field stresses, applications of insulating materials</li><li>✓ Explain the breakdown process in solid, liquid, and gaseous materials.</li><li>✓ Analyze methods for generation and measurement of High Voltages and Currents (both ac and dc)</li><li>✓ Describe the phenomenon of overvoltage and choose appropriate insulation coordination levels based on IS &amp; IEC Standards.</li><li>✓ Understand the methods for Nondestructive testing of equipment like transformers, insulators, isolators, bushings, lightning arrestors, cables, circuit breakers and surge diverters</li></ul>
3	Group H (Electric and Hybrid Electric Vehicle)	<ul style="list-style-type: none"><li>✓ To aware students about social and environmental importance of hybrid and electric vehicles</li><li>✓ To understand different electric and hybrid drive train topologies.</li><li>✓ To understand the difference between electric and conventional propulsion system</li><li>✓ To understand different energy storage devices used in EVs and HEVs.</li><li>✓ To understand the role of power electronics and energy management system in EVs and HEVs.</li></ul>
4	Group G (Mechatronics)	<ul style="list-style-type: none"><li>✓ Understand the different types of mechatronics system</li><li>✓ Analyze the types of sensors and transducers</li><li>✓ Select appropriate mechanical actuation systems</li><li>✓ Understand concepts of microcontroller and microprocessor.</li><li>✓ Understand concept of PLC.</li></ul>



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5	Group F (Energy Audit and conservation)	<ul style="list-style-type: none"><li>✓ Understand the basic process involved in the energy audit and the terminologies associated in the process.</li><li>✓ Develop audit reports of any firm including large and small scale industries, residential and commercial establishments.</li><li>✓ Understand the appropriate method for the planning and monitoring of any energy conservation project.</li><li>✓ Analyze various energy conservation in generation, transmission, distribution</li><li>✓ to get knowledge about Planning, Implementation &amp; monitoring of energy conservation project</li></ul>
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**Prof. S. H. Shete (HOD)**