Ballari Institute of Technology & Management
Ballari
Department of Electrical and Electronics Engineering

Vision & Mission of the Institute

Vision

We will be a top notch educational Institution that provides best of breed educational services by leveraging technology and delivered by best in class people in line with the globalized world.

Mission

To empower the students with Technical, Managerial Skills, Professional Ethics & Values and an appreciation of Human Creativity & Innovation for an inquisitive mind.

Vision & Mission of the Department

VISION

To create a centre for innovation and excellence in teaching, research and service in a learning environment in the high academic ambiance for imparting technical education of high standards to meet the current and future challenges of the technological developments.

MISSION

- To provide highest quality teaching and learning environment with emphasis to produce competent and compassionate graduates in electrical engineering.
- To discover, disseminate and apply knowledge related to the broad aspects of electrical engineering through education and research in close interaction with industry thus produce graduates who are fully equipped to achieve highest personal and professional standards for overall.

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Program Educational Objectives-(PEOs)

1. To prepare graduates to excel in professional career by acquiring the broad knowledge of electrical engineering.

2. To prepare graduates capable of pursuing higher education and research.

3. To prepare graduates to engage in lifelong learning, professional development activities, and/or other career enhancing activities.

4. To prepare graduates to develop leadership qualities, professional ethics and soft skills to be successful in their professional careers in industry or academia.learning and to introduce them to professional ethics and codes of professional practice.

Programme Outcomes (PO'S)

(a) Graduates will be in a position to apply knowledge of mathematics, science and allied engineering subjects as applicable to Electrical & Electronics Engineering.
(b) Graduates will have the ability to identify, formulate and design solutions in the areas of Electrical & Electronics Engineering
(c) Graduates will demonstrate the abilities to design and conduct experiments, analyze interpret data.
(d) Graduates are able to address the challenges of complex Problems of Electrical & Electronics Engineering.
(e) Graduates will have the ability to visualize and work independently or in teams
(f) Graduates will are able to adopt any modern engineering tool or software for analyzing and solving various problems of Electrical & Electronics Engineering.
(g) Graduates will have knowledge of professional and ethical responsibilities
(h) Graduates are able to communicate effectively.
(i) Graduates will be able to incorporate the understanding of impact of social, cultural and global aspects in their professional practice.
(j) In the fast changing scenario of technical and business eco system, the graduates will understand the need for quality, timeliness, life-long learning and adopt themselves accordingly
(k) Graduates will have the knowledge of contemporary issues and able to apply effectively for project management
(L) Graduates will understand the impact of professional engineering solutions in environmental contexts and the need for sustainable development.

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Definition and Validation of Course Outcomes and Programme Outcomes

Course code	Course name	Course outcomes	PO'S relevance
(10EE71)	COMPUTER TECHINIQUES IN POWER SYSTEM	CO1: Explain the elementary graph theory, primitive network. CO2: Solve the numerical related to formation of Y-bus and power flow equation. CO3: Analyze Algorithms & Flow charts for PQ & PV buses using Gauss –Siedel, Newton- Raphson & Fast decupled methods. CO4: Solve numerical related to G.S, NR methods. CO5: compare different load flow methods. CO6: Describe economic generation scheduling. CO7: Solve numerical using iterative technique for economic dispatch of power. CO8: Explain stability, transient stability, swing equation. CO9: Solve numerical using different numerical methods for solution of swing equation.	a, b, c, f, g, h, i, j, k
(10EE72)	ELECTRICAL POWER UTILIZATION	CO1: List the advantages & disadvantages of electric heating and welding over other type of heating and welding. CO2: Explain the principle involved in power frequency heating, arc heating and high frequency heating. CO3: Design heating element. CO4: Analyze the equivalent circuit of arc furnace by drawing a neat sketch. CO5: Explain the principle involved in electric welding CO6: Explain the principle involved in electrolysis in extraction of metals. CO7: Apply the principles involved in electrolysis in refining metals & electroplating CO8: Estimate illumination required for the factory lighting, flood lighting, street lighting. CO9: Explain plugging, rheostat braking, regenerative braking as applied to traction motors. CO10: Evaluate the energy saving by series parallel motors. CO11: Determine the specific energy consumption of the train. CO12: Analyze the performance of electric vehicle & transmission requirement.	a, b, c, g, h, i, j, k
(10EE73)	HIGH VOLTAGE ENGINEERING	CO1: List the advantages of transmitting electrical power at high voltages. CO2: Explain Ionization process and Breakdown criteria in gases. CO3: Explain Townsend's and Streamer's theories as applied to insulation breakdown in gases. CO4: Explain the different breakdown mechanism in solid and liquid dielectrics. CO5: Describe generation HV AC and DC voltages and impulse voltage and current. CO6: Describe the various methods of Measurement of high voltage. CO7: Analyze single stage impulse generator.	a, b, c, e, f, g, h, i, j, k

		CO8: Explain the working principle of electrostatic voltmeter, chubb and fortescue method. CO9: Describe the various Factors affecting the high voltage measurements. CO10: Describe the Non destructive insulation testing techniques. CO11: Describe the high voltage tests on isolators, circuit Breakers, cables and transformers	
(10EE74)	INDUSTRIAL DRIVES AND APPLICATIONS	CO1: List the advantages of electrical drives CO2:Analyze the requirement of a particular drive CO3: Explain the multi-quadrant operation of drives CO4: Calculate the time & energy loss in transient operation CO5: Anlayze the thermal model of motor for heating & cooling CO6: Determine the motor rating for different applications CO7: Classify the classes of motor duty CO8: Explain starting, braking, & transient analysis of DC motor drives CO9: Explain single phase fully controlled rectifier & half controlled rectifier & three phase fully controlled rectifier & three phase half controlled rectifier of DC separately excited motor. CO10: Explain the operation of induction motor drives with unbalanced rotor impedances CO11: Analyze the Closed loop control of induction motor CO12: Describe the operation of synchronous motor as a variable speed drives. CO13: Analyze the self controlled synchronous motor drive employing load commutated thruster inverter CO14: Explain rolling mill drives, cement mill drives, paper mill drives & textile mill drives	a, b, c, d, e, f, g, h, i, j, k
(10EE756)	TESTING &MISSIONING OF ELECTRICAL EQUIPMENTS	CO1: Distinguish between power system specification, plants specifications & product specifications. CO2: Evaluate the significance of temperature rise test & the method to conduct temperature rise test on power transformer. CO3: Analyze the methods of measuring the insulation resistance for power transformer And test setup for impulse test of power transformer. CO5: Determine the efficiency of a power transformer on the basis of test results of OC & SC test. CO7: Analyze the purpose and procedure of power frequency voltage with stand test on synchronous machines. CO8: Evaluate commissioning test on resistance measurement of armature, field winding & telephone interference. CO9: Decide the various ratings to be specified for a fuse & circuit breaker. CL10: Evaluate procedure of installation of C.B & metal clad switch.	a, b, c, g, h, i, j, k
(10EE761)	POWER SYSTEM PLANNING	CO1: Explain block diagram approach to power system planning. CO2: Develop block diagram of different power generating plants. CO3: Explain different components of power system. CO4: compare different types of generating plants. CO5: Develop wheeling flowcharts. CO6: Explain power system reliability . CO7: Analyze reactive power management &on-line power flow studies. CO8: Explain computerized management using power system simulator.	a, b, c, d, g, h, i, j, k

		CO9: compare operating & maintenance costs of different conventional plants.	
(10EEL77)	POWER SYSTEM SIMULATION LAB	CLO1: Explain the elementary graph theory, primitive network. CLO2: Solve the numerical related to formation of Y-bus, Bus impedance matrix. CLO3: Write power flow equations. CLO4: Analyze Algorithms & Flow charts for PQ & PV buses using Gauss –Siedel, Newton- Raphson & Fast decoupled methods. CLO5: Solve numerical related to G.S, NR methods. CLO6: Compare different load flow methods. CLO7: Explain economic generation scheduling. CLO8: Solve numerical using iterative technique for economic dispatch of power. CLO9: Explain stability, transient stability, swing equation. CLO10: Solve numerical using different numerical methods for solution of swing equation.	a, b, c, d, e, f, i, j, k
10EEL78	RELAY & HIGH VOLTAGE LAB	CO1: Demonstrate the following over current relays: IDMT non-directional, directional characteristics and features. CO2: Plot IDMT characteristics of over and under voltage relays. CO3: Determine probability flash over voltage for insulation subjected to impulse voltage. CO4: Demonstrate operation of negative sequence relay, Bias characteristics of differential relay. CO5: Determine operating characteristics of microprocessor based over and under voltage relay. CO6: Demonstrate feeder and motor protection scheme and fault studies. CO7: Measure HVAC and HVDC using standard spheres. CO8: Determine breakdown strength of transformer oil. CO9: Perform field mapping using electrolytic tank.	a, b, c, d, e, f, j