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
(10EE61)	POWERR SYSTEMS ANALYSIS AND STABILITY	CO1: Represent circuit models of power system components. CO2: Draw reactance and impedance diagrams of power systems. CO3: Analyze the different types of transients on a transmission line. CO4: compute short circuit current and reactance of synchronous machine on load CO5: Resolve unbalanced phasor into their symmetrical components. CO6: Draw sequence impedance diagram of power system elements. CO7: Represent sequence network diagram power system elements. CO8: Represent phase shift of symmetrical components in star-delta transformer bank. CO9: Analyze LG, LL, LLG faults on power system with and without fault impedance. CO10: Derive expressions for the swing equation and power angle equation of synchronous machine. CO11: explain the applications of equal area criteria	a, b, c, d, , g, h, i, j, k
(10EE62)	SWITCH GEAR AND PROTECTION	CO1: Define fuse, fusing current and current carrying capacity of a fuse. CO2: Describe the construction and operation of HRC and liquid fuse. CO3: Explain the principle of AC and DC circuit breaker. CO 4: Explain arc interruption theories as applicable to circuit breaker. CO 5: Define re-striking voltage, current chopping and rating of circuit breaker. CO 6: Explain construction and working principle of different types of circuit breaker. CO7: Evaluate maximum voltage, peak voltage across circuit breaker. CO 8: Describe the construction and working principle of different relays.(Buchholz relay, distance relay) CO 9: Explain the block diagram of microprocessor based over current relay. CO10: Explain the requirement of protective relays.(Zone of protection & primary and back up protection)	a, b, c, d, e, f, g, h, i, j, k

(10EE63)	ELECTRICAL MACHINE DESIGN	CO1: List the importance of conducting and insulator materials. CO2: Discus the limitation of electrical machines. CO3: Explain the specific loading and choice of poles CO4: Derive the output equation for single phase transformer and three phase transformer. CO5: Explain the design procedure for transformer tank and tubes. CO6: Explain the specific loadings and main dimensions of salient pole machines and non-salient pole machines. CL07: Derive the output equation for induction motor and synchronous machine.	a, b, c, d, e, f, g, h, i, j, k
(10EE64)	DIGITALSIGNAL PROCESSING	CO1: Demonstrate the Frequency domain sampling and the reconstruction of discrete time signals CO2: Explain DFT as a Linear Transformation and its relationship with other Transforms CO3: Evaluate DFT's of discrete time sequences using properties and linear Convolutions through Circular Convolution using Overlap Add and save methods. CO4: Develop FFT Algorithms for Computing the DFT of Discrete time sequence CO5: Design of Analog and Digital Filters CO6: Implementation of discrete time systems in different structures	a, b, c, d, f, h, i, j, k
(10EE65)	COMPUTER AIDED ELECTRICAL DRAWING	CLO1: Explain various devices in substations and receiving stations. CLO2: Explain various instruments involved in power stations. CLO3: Design single line diagram of various substations and receiving stations. CLO4: Construct the layouts of various power stations. CLO5: Design the assembly views of generators, motors and alternators. CLO6: Design the assembly views of 1-ϕ and 3-ϕ transformers. CLO7: Design the armature windings for both DC and AC machines. CLO8: Explain the important commands of AUTO CAD. CLO9: Construct all electrical related drawing using AUTO CAD tool.	a, b, c, d, e, g, h, k
(10EE666)	Electrical engineering materials	CO 1: Analyse the free electron theory. CO 2: Assess the general electric properties for electrical machines, lamps, fuses and solder. CO 3: Classify magnetic materials CO 4: Assess magnetic materials used for electrical machines, instruments and relay. CO 5: Distinguish insulating materials used in different electrical equipments. CO 6: Explain the properties of piezoelectric materials. CO 7: Select the ceramic and plastic materials based on applications properties.	a, b, c, d,e,f,j,k,l
(10EEL67)	D.C Machines	CO1: Determine the load characteristics of a D.C shunt and compound generator.	a, b, c, d, e, h, i, k

	and Synchronous Machines lab	CO2: Demonstrate Swinburne's test and Hopkinson's test CO3: Determine the performance characteristics of D.C motor. CO4: Demonstrate retardation test CO5: Develop a circuit for speed control of D.C MOTOR CO6: Determine VOLTAGE REGULATION OF alternator by EMF, MMF AND ZPF Method. CO7: Demonstrate performance of synchronous generator connected to infinite bus under Constant power and variable excitation and vice versa. CO8: Perform V and inverted V curves of a synchronous motor.	
(10EEL68)	CONTROL SYSTEMS LAB	CLO1: Obtain a typical second order system and determination of step response and evaluation of time- domain specifications. CLO2: Design a passive RC lead and lag compensating network for the given specifications. CLO3: Determine the transfer function of the lead compensating network. CLO4: Explain the effect of P, PI, PD and PID controller. CLO5: Obtain the Speed – torque characteristic of a 2ϕ A.C. servomotor. CLO6: Obtain the Speed – torque characteristic of a D.C. servomotor. CLO7: Determine the frequency response of a second -order system CLO8: Obtain the Nyquist plot; Bode and Root locus for a given transfer function using MATLAB CLO9: Obtain synchro pair characteristics. CLO10: derive the transfer function for a given closed loop system (level1). CLO11: obtain arthematical operations using matlab (level1). CLO12: explain loading conditions on DC servomotor (level1). CLO13: conduct an experiment on Phase lead lag compensation techniques (level2).	a, c, d, e, f, h, i, k