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**	**POs Relevance**
10MAT31	Engineering Mathematics-III	CO1: Apply Fourier series and Fourier transforms in formulations and solving different engineering problems. CO2: Demonstrate the skills in forming partial differential equations and solving heat, wave and Laplace equation. CO3:Write programs using numerical techniques to solve engineering problems. CO4:Apply Euler's formula to solve geodesics, hanging chain and brach is to chrone problems. CO5:Apply Z-transforms to solve difference equations.	a, b, c, k
10ES32	Analog electronics circuits	CO1: Explain the diode characteristics and its application CO2: Describe transistor biasing circuits CO3: Design a different transistor biasing circuits CO4: Analyze transistor at low frequency for different bias configuration CO5: Characterize transistor frequency response at low and high frequency CO6: Explain general and feedback amplifiers CO7: Explain and design different types of power amplifiers CO8: Describe working principle of oscillator using BJTs CO9: Design different type of oscillator CO10: Explain FET as amplifier with different configuration CO11: Design FET amplifier	a, c, d ,f, h, i, j, k
10ES33	Logic design	CO1: Explain combinational logic and canonical forms CO2: Apply basic Boolean postulates to simplify Boolean expression. CO3: Apply the K-map, Quin-McCluskey and Map entered variable methods to simplify Boolean expressions. CO4: Analyze various combinational circuits such as decoders, enders, digital multiplexers, adders, subtractors and comparators CO5: Design various combinational circuits such as decoders, enders, multiplexers, adders, subtractors and binary comparators CO6: Analyze various sequential circuits such as latches, flip-flops, registers and counters. CO7: Design various sequential circuits such as latches, flip-flops, registers and counters.	a, b, c, d, e, h, k

10ES34	Network Analysis	CO1: Explain the Basic circuit concepts CO2: Solve problems on Mesh and Nodal analysis for the given DC and AC networks CO3: Describe the terminology used in Network Topology like Graph, Tree, Cut set, Tie set. CO4: State & prove the Network theorems CO5: Utilize the appropriate theorems for solving problems on a given network CO6: Distinguish between series and parallel resonance CO7: Solve problems based on resonance circuits CO8: Discuss the Transient behavior and initial conditions of a given RLC circuits CO9: Apply the concepts of Laplace Transformation for a given circuits CO10: Define the parameter like z, y, h and establish their relationship	a, b, c, e, h, i, j, k
10EE35	Electrical and electronics measurements and instrumentation	CO1: Derive the fundamental units, dimensional equations CO2: Describe the fundamental units & dimensional equations CO3: Determine the unknown resistance by Wheatstone bridge, Kelvin's double bridge CO4: Determine the earth resistance by Megger and fall of potential methods. CO5: Determine the capacitance and inductance by Schering & Andersons bridge method CO6: Explain the construction & working principle of instrument transformers. CO7: Evaluate ratio & phase angle errors of CT & PT CO8: Explain the measurement of power using dynamometer & LPF method CO9: Explain the construction & working principle of electrodynamometer, single phase power factor meter. CO10: Explain the front panel details of typical dual trace oscilloscope. CO11: List the types of transducers. CO12: Explain photo conductive & photo voltaic cells.	a, b, c, d, e, h, i, j, k
10EE36	Electrical power generation	CO1: Explain conventional and non-conventional energy sources. CO2: Develop block diagram of different power plants. CO3: Analyze the constructional features, working of different types of power plants. CO4: Explain advantages and disadvantages of different types power plants. CO5: Explain terms used in power system operations. CO6: Solve numerical on economic aspects of power system, tariffs. CO7: Draw different schemes for bus bar arrangements in sub stations. CO8: Analyze various grounding techniques used in the power systems.	a, b, c, d, f, g, h, i, j, k,l

10ESL37	Analog electronics lab	CO1: Evaluate different wave shaping circuits CO2: Design the circuit diagram for RC coupled single stage BJT amplifier, Class B push pull amplifier and 2-stage BJT voltage series amplifier. CO3: Analyze the performance (gain, frequency response) of a RC coupled single stage BJT amplifier, Class B push pull amplifier and 2-stage BJT voltage series amplifier. CO4: Design the circuit diagram for RC Phase shift oscillator for f_0 10 KHz, Hartley Oscillator for f_0>=100Hz and Colpitts Oscillator for f_0>100 Hz. CO5: Plan the performance of RC Phase shift oscillator for f_0 10 KHz, Hartley Oscillator for f_0>=100Hz and Colpitts Oscillator for f_0>100 Hz. CO6: Design half wave bridge rectifier, Full wave bridge rectifier circuits with & without capacitor filter. CO7: Design BJT Darlington emitter follower. CO8: Analyze the performance (gain, frequency response) of BJT Darlington emitter follower. CO9: Verify Thevenin's theorem. CO10: Analyze the characteristics of series and parallel resonant circuits open ended experiments CO11: Level 1 Design Clipping and clamping Circuits to produce output wave forms. CO12: Level 2 Design Wein bridge oscillator to produce output wave forms.	a, b, c, d, e, f, g, h, i, j, k
10ESL38	Logic design lab	CO1: Realize the Boolean expression using logic gates, Half/Full adder, subtractor, parallel adder and subtractor using IC 7483 and compotator circuits CO2: Construct code conversion circuits such as BCD-Excess3 and Binary to gray code CO3: Design Multiplexer, De-multiplexer using IC 74153, IC 74139 CO4: Construct seven segment display circuit and priority encoder CO5: verify truth table of Flip-Flop for JK master slave, T and D type Flip-flops CO6: Design counter as sequential circuits and MOD-N counter CO7: Demonstrate the operations of SIPO, SISO, PISO, PIPO using IC 7495 CO8: Test Ring counters, Johnson counter and Sequence generator CO9: Design half/Full adder, subtractor using universal gates (Level1) CO10: Design seven segment display using decoder IC7447 and asynchronous counter IC7490 (Level1) CO11: Design 4-bit comparator using IC 7485(Level1) CO12: Solve four variable logic expressions and implement using 8:1 MUX or 4:1 MUX (Level2)	a, b, c, d, e, h, k