

1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum

Department: Electrical Engineering

Cross cutting issues in Curriculum

Core courses	Course Name	cross cutting issue	Description of course
SE Electrical	203141:Power Generation Technology	Environment and Ecology	This course teaches how the generation system works with different fuels like coal, Nuclear material. It involves renewable energy sources to reduce increasing carbon emission.
		Sustainability	It highlights the importance of national productivity and sustainable development
SE Electrical	[203145] Power System I	Professional ethics	The course highlights the importance of power system in the field of Electrical Engineering. Understanding of various equipments used in power station, design calculations of mechanical infrastructure of power system components. Analysis of various parameters like Resistance and Inductance, Capacitance of Transmission lines and Performance of Transmission lines.
SE Electrical	203142: Material Science	Professional ethics	This course enables the students to understand properties of electrical engineering materials based on personal values. This highlights the selection of materials for applications in various electrical equipment.
		Environment and sustainability	This course increases awareness among students about environment and green technology using nanotechnology, battery and solar materials and create attitude towards sustainable lifestyle.
SE Electrical	203154:Solar Thermal Systems	Professional ethics, Environment and sustainability	This course enables the students to understand basics and types of solar thermal systems, aware of different Standards and certification for Concentrator Solar Power.Solar energy is one of the cleanest sources of energy, and it's an extremely effective way of your household more efficient and sustainable. Solar panels don't use any water to generate electricity, they don't release harmful gases into the environment, and the source of their energy is abundant and, best of all, free.

SE Electrical	Audit Course II: Solar Photovoltaic System	Human Values, Environment, Sustainability	This course creates awareness to student about clean and green energy and this is very helpful for healthy life.
SE Electrical	203143: Analog and Digital Electronics	Professional ethics Environment and sustainability	To create the awareness among students to follow preventive measures of safety to reduce electric, electronics shock and related accident. Try to avoid electronics waste and try to recycle and reused the electronics components. So that effective implementation of ewaste management will be initiated. Through the ewaste management save the 2 degree Celsius temperature of global according to paris contract 2020 for sustainable development goals target.
SE Electrical	203146: Electrical Machines-I	Environment and Sustainability, Professional ethics	Testing of transformer performance by indirect loading method results in energy conservation and hence reduces impact on environment. Understand best selection of machines for specific applications balance cost, delivery, and performance - without compromising safety
TE Electrical	303142: Electrical Machines-II	Environment and Sustainability,	Testing of 3 ph induction motor performance by indirect loading method results in energy conservation and hence reduces impact on environment.
TE Electrical	303152A- Wind Energy System	Professional ethics,	The course create awareness about energy conservation by using wind energy system, generator design, standards and certification, quality assurance and standards, site assembling and fabrications.
		Environment and sustainability	This subject highlights environmental impacts of wind electricity generator, economics and sustainability of wind electricity, environmental impact and assessment.
TE Electrical	303150 : Energy Audit and Management	Professional ethics	Create awareness about energy conservation, Energy Management Strategy, energy security, Responsibilities and duties of energy manager
		Environment and Sustainability	Create awareness on Renewable sources of energy that will not result in pollution and it can be reused. This subject also gives information about importance of energy

			conservation, energy and environmental impacts.
TE Electrical	303148 : Utilization of Electrical Energy	Professional ethics	The course teaches to apply knowledge acquired can be applied in various fields such as electric heating, illumination, chemical processes, and electric traction, aware about the importance of maximizing the energy efficiency by optimum utilization of electrical energy. To develop ability amongst the students to analyze the performance of arc furnaces, electric traction, different sources of light, illumination schemes.
TE Electrical	311121: Industrial and Technology Management	Professional ethics,	To learn the rules of good behavior for today's most common social and business situations. To create the awareness among students to follow the professional ethics, avoid the plagiarism of Patent, IPR, copyright, etc
		leadership	To develop inter personal skills and be an effective goal oriented leader and to develop personalities of students in order to empower them and get better insights into ones responsibilities in personal life to build better human being.
		Human Values	To create the awareness among students to follow human values such as honesty, discipline, sincerity, etc. To introduce the students to skills necessary for getting, keeping and being successful in a profession To expose students to right attitudinal and behavioral aspects and to build the same through activities
TE Electrical	303149: Design of Electrical Machines	Professional ethics.	The course teaches to apply knowledge of Electrical Machines, for engineering applications, Design of electrical machine as well as to analyze different parameters, Design a machine to meet desired needs within safety of IS Standard.
TE Electrical	303144: Electrical Installation, Maintenance and Testing	Professional ethics,	The course teaches to basic concepts, design and estimation of distribution systems & substation.
		environment, sustainability,	Practice professional and ethical responsibility to carry out the maintenance of electrical devices to ensure the reliable working of the same

		Human Values	Ensures the electrical safety about human being while working in factory. To take the Prevention of Accidents & precautions and understanding of CPR treatment to be followed in the factory.
TE Electrical	303146: Power System-II	Professional ethics,	The course teaches the concept of transmission line to apply knowledge of mathematics, science for engineering applications. Identify, formulate, and solve engineering problems. Practice professional and ethical responsibility. Use the techniques, skills, and modern engineering tools such as matlab necessary for engineering practice.
		Environment and sustainability, Human Values	The course teaches design and conduct experiments, as well as to analysis of load flow, understand a corona effect for realistic constraints on health and safety
TE Electrical	303141: Advance Microcontroller and its Applications	Professional ethics, environment, sustainability	The course teaches to apply knowledge of mathematics, science for engineering applications, Design and conduct experiments, as well as to analyze and interpret data, Design a component to meet desired needs within realistic constraints of health and safety. Identify, formulate, and solve engineering problems. Practice professional and ethical responsibility. Use the techniques, skills, and modern engineering tools necessary for engineering practice
TE Electrical	Audit Course III 303152(B): Microcontroller MSP 430 and Applications	Professional ethics, sustainability	The course teaches to apply knowledge of mathematics, science for engineering applications, Design and conduct experiments, as well as to analyze and interpret data. Design a component to meet desired needs within realistic constraints of health and safety. Identify, formulate, and solve engineering problems. Practice professional and ethical responsibility. Use the techniques, skills, and modern engineering tools necessary for engineering practice
BE Electrical	403142: PLC and SCADA Applications	Professional ethics	The course teaches to apply knowledge gained about PLCs and SCADA systems to real-life industrial applications and make our system safer by automation. This subject

			give knowledge of automation for improving quality and quantity of manufactured product in industries
BE Electrical	403144(D): Electric and Hybrid Vehicle	Human Values, Environment and Ecology, Ethical values, Sustainability	This course enables the students to understand the importance of environment, makes the young generation students aware of their social responsibilities, increases awareness among students about environment and create attitude towards sustainable lifestyle, also Highlights of the national sustainable development and inclusive growth.
BE Electrical	403141:Power System Operation and Control	Professional Ethics	This course teaches how the power system utilities work to provide Electricity from generation end to end consumer. It involves different operations to maintain good quality of power supply and the control techniques related to it.
		Human Values	To imagine life without these systems is a thought experiment that is virtually impossible. Simply put; life in a world without these systems would be nearly unrecognizable in comparison to the life that most of us currently lead.
BE Electrical	403143(B) Power Quality	Professional ethics	The course teaches to apply knowledge of power quality standards ,various power quality issues, Carry out power quality monitoring selection of cost effective power quality mitigation solutions ,Practice professional and ethical responsibility, Use the techniques, skills, and modern engineering tools necessary for Analyze power quality parameters and carry out power quality analysis.
BE Electrical	403147: Switchgear and Protection	Professional ethics	This course enables the students to understand arc interruption methods ,construction and working of different types of circuit breakers, Describe different type of relays, Practice professional and ethical responsibility, Use the techniques, skills, and modern engineering tools necessary for to resolve faults occurs in system.
BE Electrical	403150 Elective –IV : Smart Grid	Professional ethics,	This course enables the students to understand evolution of smart grid , enabling technology about intelligent control of power grid with the various generating sources of electricity.

		Environment Sustainability	Social responsibilities, increases awareness among students about environment use of renewable and create attitude towards sustainable lifestyle.
BE Electrical	403153- Energy Storage System	Professional ethics,	This course create awareness about energy storage system such as batteries, supercapacitor etc. This also highlights the construction of different types of batteries, sizing and selecting the energy storage technology and its supporting subsystems.
		Environment and sustainability	This subject highlights to aware about energy management strategies used in hybrid and electric vehicles and increases awareness among students about environment and create attitude towards sustainable lifestyle.
BE Electrical	403144: EHV AC Transmission	Human values, Environment and sustainability	Study of Effects of high electrostatic fields on humans, animals and plants, Effects of power frequency magnetic fields on human health increases awareness among students about human values, environment


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