



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

Upload the list and description of courses which address the Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum

### INDEX

Sr. No.	Description	Pg. No.
1.	List of the course that address the crosscutting issues	1
2.	Links for the Documents that gives description of courses which address the crosscutting issues attested by the HOD.	4
3.	Description of courses which address the crosscutting issues	5

## List of the course that address the crosscutting issues

The list of courses in each programme which address the Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum is as given below.

### Civil Engineering

Sr. No.	Core Course	Course No
1	SE Civil Engineering	Architecture Planning and Design of Building: 201001
2	SE Civil Engineering	Strength of Material: 201002
3	SE Civil Engineering	Geotechnical Engineering : 201003
4	SE Civil Engineering	Fluid Mechanics I201004
5	SE Civil Engineering	Architectural Planning and Design of Buildings 201005
6	SE Civil Engineering	Surveying : 201006
7	SE Civil Engineering	Concrete Technology : 201007
8	SE Civil Engineering	Structural Analysis-I: 201008
9	TE Civil Engineering	Hydrology and Water Recourses; 301001
10	TE Civil Engineering	Infrastructure Engineering and Construction Techniques: 301002
11	TE Civil Engineering	Structural Design I; 301003
12	TE Civil Engineering	Fluid Mechanics II; 201004
13	TE Civil Engineering	Advanced Surveying: 301007
14	TE Civil Engineering	Foundation Engineering 301009
15	TE Civil Engineering	Structural Design II; 301010



## Amrutvahini College of Engineering, Sangamner

16	TE Civil Engineering	Environmental Engineering I : 301011
17	BE Civil Engineering	Environment Engineering II : 401001
18	BE Civil Engineering	Architecture and Town Planning :401004 D
19	B.E. Civil Engineering	Elective II- TQM and MIS in Civil Engineering : 401005
20	BE Civil Engineering	Elective III- Air pollution and Control: 401009
21	BE Civil Engineering	Elective IV- Ferrocement Technology: 401010
22	BE Civil Engineering	Elective IV- Construction Management 401010

### Computer Engineering

Sr. No.	Core courses	Course Name
1	SE Comp	210246: Soft Skills
2	TE Comp	310246: Skills Development Lab
3	TE Comp	310245: Computer Forensic and Cyber Applications
4	TE Comp	310248: Employability Skills Development Lab
5	TE Comp	310244: Information System and Engineering Economics
6	BE Comp	410251 : Information and Cyber Security
7	SE Comp	210258 IV: Stress Relief : Yoga Meditation
8	TE Comp	310259 IV : Leadership and Personality Development

### Electrical Engineering

Sr. No.	Core courses	Course Name
1	SE Electrical	<b>203141:</b> Power Generation Technology
2	SE Electrical	203145: Power System I
3	SE Electrical	203142: Material Science
4	SE Electrical	203154:Solar Thermal Systems
5	SE Electrical	Audit Course II: Solar Photovoltaic System
6	SE Electrical	[203143]Analog and Digital Electronics
7	SE Electrical	203146: Electrical Machines-I
8	TE Electrical	303142: Electrical Machines-II
9	TE Electrical	303152A- Wind Energy System
10	TE Electrical	303150 : Energy Audit and Management
11	TE Electrical	303148 : Utilization of Electrical Energy
12	TE Electrical	311121: Industrial and Technology Management
13	TE Electrical	303149: Design of Electrical Machines
14	TE Electrical	303144: Electrical Installation, Maintenance and Testing
15	TE Electrical	303146: Power System-II
17	TE Electrical	303141: Advance Microcontroller and its Applications
18	TE Electrical	Audit Course III 303152(B): Microcontroller MSP 430



## Amrutvahini College of Engineering, Sangamner

		and Applications
19	BE Electrical	403142: PLC and SCADA Applications
20	BE Electrical	403144(D): Electric and Hybrid Vehicle
21	BE Electrical	<b>403141:</b> Power System Operation and Control
22	BE Electrical	403143(B): Power Quality
23	BE Electrical	403147: Switchgear and Protection
24	BE Electrical	403150 Elective –IV : Smart Grid
25	BE Electrical	403153- Energy Storage System

### Electronics Engineering

Sr. No.	Core courses	Course Name
1	SE ELEX	204192: Soft Skills
2	SE ELEX	204192 A: Road Safety Management
3	SE ELEX	204192 A: Japanese Language module-I
4	TE ELEX	304208:Business Management and Organization

### Electronics & Telecommunication Engineering

Sr. No.	Core courses	Course Name
1	SE E&TC	204189:Electronic Skill Development
2	TE E&TC	Japanese Language Audit Course (Audit Course)
3	TE E&TC	Cyber and Information Security (Audit Course)
4	TE E&TC	304188: Business Management
5	BE E&TC	Green Energy (Audit Course)
6	BE E&TC	Environmental issues and Disaster Management (Audit Course)

### Engineering Science

Sr. No.	Core Course	Course Name
1	FE. Common	101007: Audit course
2	FE. Common	107009 :Engineering Chemistry
3	FE. Common	110013: Project based learning

### Information Technology

Sr. No.	Core courses	Course Name
1	SE IT	214449: Soft Skills
2	TE IT	314448: Employability Skills Development Lab
3	BE IT	414453 : Information and Cyber Security



## Amrutvahini College of Engineering, Sangamner

### Mechanical Engineering

Sr. No.	Core courses	Course Name
1	SE Mech	202054 : Value Education
2	SE Mech	202054 A: Innovations in Engineering Field/ Agriculture
3	SE Mech	202054 B : Road Safety
4	SE Mech	202047: Soft Skills
5	TE Mech	Seminar [302053]
6	TE Mech	Intellectual Property Rights [302054]
7	BE Mech	Energy Audit and Management (Elective II) (402045C)
8	BE Mech	Industrial Engineering (Elective III) (402049B)

### Production Engineering

Sr. No.	Core courses	Course Name
1	SE Prod	211105: Machine Drawing & computer graphics
2	SE Prod	211104: Materials science
3	SE Prod	211105: Soft Skills
4	TE Prod	311086: Employable skill devt.
5	BE Prod	411089 A: Human factors in engg. & ergonomics

### MBA

Sr. No.	Core courses	Course Name
1	MBA first year	GC-02: Organizational Behaviour
2	MBA second year	401: Managing for Sustainability

### **Links for the Documents that gives description of courses which address the crosscutting issues**

The links given in the table below provides the list and description of courses which address the Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum for various programmes.

Sr. No.	File Description	Link to open
1.	List and description of courses which address the Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum.	<a href="#">Click Here</a>



## Description of courses which address the crosscutting issues

Description of courses which address the crosscutting issues in each programme is given below:

### Civil Engineering

Core Course	Course No	Cross Cutting Issue	Description of Course
SE Civil Engineering	Architecture Planning and Design of Building 201001	Professional Ethics	This course enables the students to understand the concept of types of building and basic requirements of building components.
		Environmental sustainability	This course creates awareness regarding eco friendly materials and safety in construction.
		Human Values	While designing the building principle of planning are follows.
SE Civil Engineering	Strength of Material: 201002	Professional Ethics	Material quality control by understanding by experimental investigation in laboratory as safety, Environmental impact and health. For the technological alternative it is essential to determine the physical properties of materials like, strength, toughness and, malleable, ductile, good conductors of heat and electricity. And other parameter to do the comparison.
		Environmental sustainability	Use materials in the most productive way with an emphasis on using less. Reduce Environmental impacts throughout the material life cycle. Assure we have sufficient resources to meet today's needs and those of the future. Norms of practice e.g IS codes
SE Civil Engineering	Geotechnical Engineering : 201003	Environmental Sustainability	The course highlights the causes and remedial measures of landslide. It also enables the students to understand evil effect of subsurface contamination on subsoil and various methods to control subsurface contamination.
SE Civil Engineering	Fluid Mechanics I 201004	Professional Ethics	In this subject student get idea about various properties of fluid and how to measure the pressure using various gauges. Also students get idea about energy losses in pipes and remedial measure to avoid friction losses.
SE Civil Engineering	Architectural Planning and Design of Buildings 201005	Environmental Sustainability	From this course students learn- How to Development plan gives proper land use planning, utilization of resources, how to use building byelaws, Green building concept for sustainable planning. Rain water harvesting and waste management system for Environmental friendly planning point of view.
		Professional Ethics	Students can understand some town planning aspects, Building byelaws, Safety aspects of building, how to plan residential and public building,
		Human Values	While designing the building principle of planning are follows.
SE Civil Engineering	Surveying : 201006	Professional Ethics	This course deals with the study of different types of surveying instruments and methods of



## Amrutvahini College of Engineering, Sangamner

Core Course	Course No	Cross Cutting Issue	Description of Course
			surveying. This involves the survey for different types of works such as road work, building work, tunnel work, dam work etc. This course gives what are the different professional ethics we should follow while doing work in team.
		Environmental Sustainability	In this course while doing the survey for different work, we should follow the different guidelines which will takes into consideration effect of future work on the Environmental. This course creates the awareness among the students regarding the sustainability by following the guidelines which will reuse the different natural materials for the proposed work.
SE Civil Engineering	Concrete Technology : 201007	Professional Ethics	This course highlights the importance of concrete in the field of construction. Understanding the various properties of construction materials, testing of materials, different types of cement and concrete used for the construction work. Concrete mix design helps for selecting the proper proportion of ingredients.
SE Civil Engineering	Structural Analysis-I: 201008	Environmental Sustainability	In this course students get aware about safety requirements of various structure.
TE Civil Engineering	Hydrology and Water Recourses 301001	Professional Ethics	Students learn the rainfall, runoff and flood hydrograph related study; also study related to Irrigation, water management planning, regulating, designing, and construction, operation, maintenance and cost allocation of canal.
		Environmental Sustainability	After finding duty and delta for particular crop saving of water can be done.
TE Civil Engineering	Infrastructure Engineering and Construction Techniques: 301002	Professional Ethics	This course enables the students to understand the component parts of railway, Tunnel construction Methods and component parts Docks & Harbours
		Environmental Sustainability	Create awareness about Public transport systems such as railway, concept of smart city.
TE Civil Engineering	Structural Design I 301003	Professional Ethics	In this course students get aware about safety requirements of various steel structures.
		Environmental Sustainability	Saving of material after designing the steel member from IS 800:2007
TE Civil Engineering	Fluid Mechanics II 201004	Professional Ethics	This course get detail idea about most efficient channel, Energy decapitation in hydraulic jump, and practical uses of hydraulic jump, head and efficiencies of centrifugal pump. Information about hydropower plant.
		Environmental Sustainability	Students get aware about electricity generation through hydroelectric power plant.
TE Civil Engineering	Advanced Surveying: 301007	Professional Ethics	This course highlights the importance of Objects, Methods of Geodetic Surveying, Introduction to triangulation, Classification of triangulation systems.



## Amrutvahini College of Engineering, Sangamner

Core Course	Course No	Cross Cutting Issue	Description of Course
		Environmental Sustainability	In this course while doing the advance survey for different work, we should follow the different guideline which will takes into consideration effect of future work on the Environmental. This course create the awareness among the students regarding the sustainability by following guidelines which will reused the different natural materials for the proposed work.
TE Civil Engineering	Foundation Engineering 3010009	Professional Ethics	This course gives the information about safe and economical design of shallow pile foundation
		Environmental Sustainability	This course gives information about geo synthesis which are used for strengthen the soil and help to reduce pollution.
TE Civil Engineering	Structural Design II 301010	Professional Ethics	In this course students get aware about safety requirements of various RCC structure.
		Environmental Sustainability	Saving of material after designing the RCC member from IS 456:2000
TE Civil Engineering	Environmental Engineering I : 301011	Professional Ethics	This course illustrates the data collection for water supply schemes, estimation of quantity of water and its study of its characteristics. It also includes design of various units of WTP such as aerators, sedimentation tank and filters. In addition it also emphasizes on importance of proper water distribution through distribution system.
		Environmental Stainability	This course highlights the aspects related to air pollution, noise pollution, solid waste management and water treatment. It also includes importance of rainwater harvesting system.
BE Civil Engineering	Environment Engineering II : 401001	Professional Ethics	This course illustrates the data collection for waste water supply schemes, estimation of quantity of waste water and its study of its characteristics. It also includes design of various units of STP such as primary sedimentation tank, Secondary Sedimentation tank and filters. In addition it also emphasizes on importance of modern waste water treatment system.
		Environmental Sustainability	This course highlights the aspects related to waste water pollution, solid waste management and waste water treatment. It also includes importance of low cost waste water treatment systems. It also covers the reuse and recycle of treated waste water.
BE Civil Engineering	Architecture and Town Planning :401004 D	Environmental Sustainability	This course highlights – Qualities of an Architecture in terms of ecofriendly, future growth of area. Role of urban planner and architect in terms of demand and supply of area, utility of area.



## Amrutvahini College of Engineering, Sangamner

Core Course	Course No	Cross Cutting Issue	Description of Course
			Landscaping regarding knowledge of green areas, fresh and healthy atmosphere. Sustainable architecture highlight on Environmental friendly and sustainable planning. Role of different planning agencies according to sustainable and Environmental friendly strategies. How to use modern tools for sustainable planning.
		Professional Ethics	Students understand the different types of plants, their features etc. How to convert any parcel of land into planable form (Plan), Traffic and Transportation strategies, and different road pattern. Understand legislation and planning strategy of ACT, Semi government organization etc.
B.E. Civil Engineering	Elective II TQM and MIS in Civil Engineering : 401005	Professional Ethics	To create awareness amongst students to follow professional ethics. Good ethical practices are an essential part of a construction company's reputation. Frequently contractors knowingly hide mistakes and poor quality work. In some cases these defects have resulted in buildings collapsing, even killing people. Contractors have signed a contract which binds them to delivering particular quality requirements and specifications.
BE Civil Engineering	Elective III Air pollution and Control: 401009	Environmental Sustainability	This course contains Environmental issues related to air pollution problem. It involves importance of atmosphere, balance of ecosystem, control of all types of air pollution. The course helps in developing knowledge about control equipment's of air pollution, rule and regulation for emission control.
		Professional Ethics	This course enables the students to under the composition of air, investigation of air quality problems, use of various control equipment's, legislation and regulation in air pollution control, Environmental impact assessment and management.
BE Civil Engineering	Elective IV Ferrocement Technology: 401010	Professional Ethics	This course enables the students to understand the concept of ferrocement its properties, design methods, applications and use in construction industry.
BE Civil Engineering	Elective IV Construction Management 401010	Professional Ethics	This subject gives detailed idea about project scheduling, risk management, risk mitigation and value engineering.
		Environmental Sustainability	Under this course students will learn about energy resources and their consumption pattern also energy cost escalation and its impact.
		Human values	This course cover the need and importance of labour law, also it cover workman compensation act 1923, building and other construction worker act 1966 and child labour act



## Computer Engineering

Core courses	Course Name	cross cutting issue	Description of course
SE Comp	210246: Soft Skills	Professional ethics , Communication Skills	The course highlights the importance of 1. To encourage the all-round development of students by focusing on soft skills. 2. To make the engineering students aware of the importance, the role and the content of soft skills through instruction, knowledge acquisition, demonstration and practice. 3. To develop and nurture the soft skills of the students through individual and group activities. 4. To expose students to right attitudinal and behavioral aspects and to build the same through activities
TE Comp	310246: Skills Development Lab	Professional Skills, Sustainability , Adaptability	The course teaches to apply knowledge of 1. To adapt the usage of modern tools and recent software. 2. To evaluate problems and analyze data using current technologies 3. To learn the process of creation of data-driven web applications using current technologies 4. To understand how to incorporate best practices for building enterprise applications 5. To learn how to employ Integrated Development Environment(IDE) for implementing and testing of software solution 6. To construct software solutions by evaluating alternate architectural patterns
TE Comp	310245: Computer Forensic and Cyber Applications	Social Ethics, Human Values, , Ethical values, Professional ethics, Sustainability	This course enables the students to understand meaning of Following 1. To learn Forensics and use of Computers 2. To learn Tools used in Computer Forensics and Cyber Applications 3. To learn programming for Computer Forensics
TE Comp	310248: Employability Skills Development Lab	Human Values, Ethical values, Professional skills, Sustainability	This course enables the students to understand meaning of following 1. To learn use of advance programming, documentation, presentation and communication Tools 2. To learn use to group discussions in problem solving 3. To learn technology and group leadership skills 4. To learn administrative skills and responsibilities in teamwork 5. To learn quantitative and technology skills
TE Comp	310244: Information System and Engineering Economics	Environment and Ecology, Sustainability	This course enables the students to understand meaning of following 1. To prepare the students to various forms of the Information Systems and its application in organizations. 2. To expose the students to the managerial issues relating to information systems and help them identify and evaluate various options in Information Systems. 3. To Prepare engineering students to analyze cost /



## Amrutvahini College of Engineering, Sangamner

			revenue data and should able to do economic analyses in the decision making process to justify or reject alternatives / projects on an economic basis for an organization.
BE Comp	410251 : Information and Cyber Security	Human Values, Ethical values, Professional ethics, Sustainability, Adaptability	This course enables the students to understand meaning of 1.To offer an understanding of principle concepts, central topics and basic approaches in information and cyber security. 2.To know the basics of cryptography. 3. To acquire knowledge of standard algorithms and protocols employed to provide confidentiality, integrity and authenticity. 4. To enhance awareness about Personally Identifiable Information (PII), Information Management, cyber forensics.
SE Comp	210258 IV: Stress Relief : Yoga Meditation	Human Values, Social Values, Professional Ethics, Stress Management, Sustainability	Highlights the importance of following Points 1.To impart knowledge about the basic technique and practice of yoga, including instruction in breath control, meditation, and physical postures. 2. To gain an intellectual and theoretical understanding of the principles embodied in the Yoga Sutras, the Bhagavad-Gita, and other important texts and doctrines 3. Relaxation and stress reduction ,Personal insight and self-understanding, Personal empowerment, Gaining wisdom and spiritual discernment 4. Awakenning the abilities or powers of the Super conscious mind
TE Comp	310259 IV : Leadership and Personality Development	Professional ethics , Communication Skills, Human Values	Generates awareness about 1. To develop inter personal skills and be an effective goal oriented team player. 2. To develop professionals with idealistic, practical and moral values. 3. To develop communication and problem solving skills. 4. To re-engineer attitude and understand its influence on behavior

### Electrical Engineering

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.



## Amrutvahini College of Engineering, Sangamner

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 e waste management will be initiated. Through the e waste 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 application based on cost & performance without compromising with safety.
TE Electrical	303142: Electrical Machines-II	Environment and sustainability	Testing of 1 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.



## Amrutvahini College of Engineering, Sangamner

			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 Elect	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



## Amrutvahini College of Engineering, Sangamner

			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



## Amrutvahini College of Engineering, Sangamner

			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.

### Electronics Engineering

Core courses	Course Name	cross cutting issue	Description of course
SE ELEX	204192: Soft Skills- (2012 PAT)	Professional ethics	The course teaches right and responsibilities regarding Intellectual Property, workplace rights and responsibilities, central professional responsibilities of engineers, responsibility for environment. Vision, mission, coaching, mentoring and counseling, managing time, managing stress, meditation, self learning , complex problem solving and creativity, corporate and business etiquettes. team work, team effectiveness, team problem solving. Values and belief Systems.
SE ELEX	204192 A: Road Safety Management (2015PAT)	Social ethics	The course highlights the need for stricter enforcement of law to ensure greater safety on roads and an environment-friendly road transport operation is of paramount importance. Safety and security are growing concerns for businesses, governments and the traveling public around the world, also in India. It is, therefore, essential to take new initiatives in raising awareness, skill and knowledge as one of the ibid stake holders who are expected to follow the rules and policies of the government in order to facilitate safety of individual and safe mobility of others.
SE ELEX	204192 A: Japanese Language module-I (2015PAT)	Professional ethics	The course introduce Japanese language with utmost professionalism to create awareness about the bright prospects and to enhance the proficiency and commitment. It will then prove to be the ultimate path to the quest for professional excellence.
TE ELEX	304208: Business Management and Organization	Professional Ethics Human Values	The course highlights Professional Ethics & Business Ethics. It also highlights Social Responsibilities of



## Amrutvahini College of Engineering, Sangamner

	(2015PAT)		Business such as Responsibilities towards shareholders, Responsibilities towards Customer & Responsibilities towards Employee.
--	-----------	--	--

### Electronics and Telecommunication Engineering

Core courses	Course Name	Cross Cutting Issue	Description of course
SE E&TC	204189: Electronic Skill Development	Professional ethics	The course highlights the importance of Basic Electronics Engineering, Fundamentals of Programming, Open Source electronics platform based on easy-to-use hardware and software for the design of electronic circuits.
SE E&TC	204199: Employability Skill Development	Professional ethics, Human Values, Ethical values	The course teaches to apply knowledge of and Practice professional and ethical responsibilities such as Understanding Self and Soft Skills, Leadership Skills and Group Dynamics, and Quantitative Ability & Logical Reasoning. The course objectives are: <ul style="list-style-type: none"> <li>• Develop good communication skills – both oral as well as written.</li> <li>• Encourage creative and critical thinking among students.</li> <li>• Nurture collaborative behavior to work efficiently in groups.</li> </ul>
TE E&TC	Japanese Language Audit Course (Audit Course)	Human Values, Ethical values, Professional ethics	This course enables the students to learn Japanese language and its cultural issues with utmost professionalism to adapt in the work culture.
TE E&TC	Cyber and Information Security (Audit Course)	Human Values, Ethical values, Professional ethics, and Sustainability	This course enable the students to understand <ul style="list-style-type: none"> <li>• To learn the issues of security in IT</li> <li>• To investigate various security threats in IT</li> <li>• To increase the awareness about information and network security</li> </ul>
TE E&TC	304188: Business Management	Human Values, Ethical values, Professional ethics	This course enables the students to learn Human Values, Ethical values, Professional ethics. The course objectives are: <ul style="list-style-type: none"> <li>• To get awareness about various domains in Business Management.</li> <li>• To understand concept of Quality Management, Financial Management and Project Management.</li> <li>• To learn Human Resource Management, marketing management are the major tasks in Business</li> </ul>
BE E&TC	Green Energy (Audit Course)	Human Values, Ethical values, Environment and Sustainability	This course provides an introduction to energy systems and renewable energy resources, with a scientific examination of the energy field and an emphasis on alternate energy sources and their technology and application. The students will explore society's present needs and future energy demands, examine conventional energy sources and systems, including fossil fuels and nuclear energy, and then focus on alternate, renewable energy sources such as solar, biomass (conversions), wind power, geothermal, and hydro. Energy conservation methods will be emphasized.



## Amrutvahini College of Engineering, Sangamner

BE E&TC	Environmental issues and Disaster Management (Audit Course)	Human Values, Ethical values, Environment and Sustainability	<p>This course enables the students to learn the issues related with Environment and Sustainability. The course objectives are:</p> <ul style="list-style-type: none"> <li>• To develop understanding of Environment Issues and Biodiversity</li> <li>• To introduce to the students the environment, Disaster Management</li> <li>• To enable students to understand ecosystem and preservation of environment</li> <li>• To understand Disaster Management and handling them</li> </ul>
------------	---	--	---

### Engineering Science (First Year Engineering)

Core Course	Course Name	Cross cutting issue	Description of course
FE. Common	101007: Audit course	Environmental Study	This course highlights on knowledge about concepts and strategies related to sustainable development and various components of environment..Also creates awareness and gives information related to biotic and abiotic factors within an ecosystem, to identify food chains, energy flow and relationships. This course enhances ability to understand the value of biodiversity and current efforts to conserve biodiversity on national and local scale.
FE. Common	107009 : Engineering Chemistry	Natural resources and fuels	Engineering Chemistry gives knowledge of sources of water, how surface water ,rain water and underground water becomes impure due to man made activities. This course also give practical knowledge of analysis of water regarding its impurities in terms of hardness level, alkalineness of water etc. It also elaborates various renewable and non renewable sources of energy, use of solid ,liquid and gaseous fuels for domestic and industrial purposes.
FE. Common	110013: Project based learning	Social learning	This course enables students to relate daily issues with learning .while doing mini project in group student will learn finding an issue, then study material available related to that project, fining materials required for its construction, to think in group and find solution and finally construct project.

### Information Technology

Core courses	Course Name	cross cutting issue	Description of course
SE IT	214449: Soft Skills	Professional ethics , Communication Skills	<p>The course highlights the importance of</p> <ol style="list-style-type: none"> <li>1. To encourage the all-round development of students by focusing on soft skills.</li> <li>2. To make the engineering students aware of the importance, the role and the content of soft skills through instruction, knowledge acquisition, demonstration and practice.</li> <li>3. To develop and nurture the soft skills of the students through individual and group activities.</li> <li>4.To expose students to right attitudinal and behavioral aspects and to build the same through activities</li> </ol>



## Amrutvahini College of Engineering, Sangamner

TE IT	314448: Employability Skills Development Lab	Human Values, Ethical values, Professional skills, Sustainability	This course enables the students to understand meaning of following 1. To learn use of advance programming, documentation, presentation and communication Tools 2. To learn Business drivers. 3. To learn technology of classic data center. 4. To learn virtualized data center 5. To learn compliance aspects in cloud.
BE IT	414453 : Information and Cyber Security	Human Values, Ethical values, Professional ethics, Sustainability, Adaptability	This course enables the students to understand meaning of 1. To offer an understanding of principle concepts, central topics and basic approaches in information and cyber security. 2. To know the basics of cryptography. 3. To acquire knowledge of standard algorithms and protocols employed to provide confidentiality, integrity and authenticity. 4. To enhance awareness about Personally Identifiable Information (PII), Information Management, cyber forensics.

### Mechanical Engineering

Core courses	Course Name	Cross- cutting issue	Description of course
SE Mech	202054 : Value Education	Human Values, Professional ethics, Environment and Sustainability.	This course enables the students to understand meaning of values and select their goals by self-investigation based on personal values, enables the students to understand value of truth, commitments, honesty, sacrifice, care, unity, team work and relationship, educates and makes the young generation students aware of their social responsibilities, increases awareness among students about environment and create attitude towards sustainable lifestyle.
SE Mech	202054 A: Innovations in Engineering Field/ Agriculture	Environment and Sustainability	Highlights the importance of national productivity, sustainable development and inclusive growth.
SE Mech	202054 B : Road Safety	Professional ethics	Generates awareness about number of people dying every year in road accidents, traffic rules and characteristics of accident, Gain information and knowledge about people responsible for accidents and their duties, Understand the importance of multidisciplinary approach to planning for traffic safety and rehabilitation.
SE Mech	202047: Soft Skills	Professional ethics	Improved communication, interaction and presentation of ideas, Right attitudinal and behavioural change, Developed right-attitudinal and behavioral change
TE Mech	Seminar [302053]	Professional ethics	To create the awareness among students to follow the professional ethics, avoid the plagiarism.
TE Mech	Intellectual Property Rights [302054]	Professional ethics	Intellectual property rights creates the awareness about new innovative ideas and also refers to the rights which are attached to the creation of the



## Amrutvahini College of Engineering, Sangamner

			mind and which take the form of property.
BE Mech	Energy Audit and Management (Elective II) (402045C)	Professional ethics, environment and sustainability	Significance of Waste heat recovery and Cogeneration. Energy Audit of the residence / society / college where students are studying. - Carry out electrical tariff calculation and accurately predict the electricity bill required for the installation. - Suggest various methods to reduce energy consumption of the equipment / office / premises
BE Mech	Industrial Engineering (Elective III) (402049B)	Professional ethics, Human values.	This course teaches the students to apply the Industrial Engineering concept in the industrial environment, Manage and implement different concepts involved in methods study and understanding of work content in different situations, Undertake project work based on the course content, Describe different aspects of work system design and facilities design pertinent to manufacturing industries, Identify various cost accounting and financial management practices widely applied in industries, Develop capability in integrating knowledge of design along with other aspects of value addition in the conceptualization and manufacturing stage of various products.

### Production Engineering

Core courses	Course Name	cross cutting issue	Description of course
SE Prod	211105: Machine Drawing & computer graphics	Ethics in professional field, Ethical values	Course emphasises the importance of computer aided manufacturing using technologies such as CAM, CAE, FEA, CFD, PLM.2)and its application in 2D sketching. It is also helpful to ethically communicate between Designer and Manufacturer using 2D drawings&3D images avoiding any kind of misunderstanding.
SE Prod	211104: Materials science	Professional ethics, environment, sustainability	The contents of the course helps to understand knowledge of materials & their usefulness in the field of engg. for the betterment of the society. Material testing helps to analyze and interpret properties in designing a component to meet desired needs within realistic constraints of health and safety with ethical responsibility.
SE Prod	211105: Soft Skills	Human Values, Environment and Ecology, Professional ethics, Sustainability	This course enables the students to understand meaning of values and select their goals by selfinvestigation based on personal values, enables the students to understand value of truth, commitments, honesty, sacrifice, care, unity, team work and relationship, educates and makes the young generation students aware of their social responsibilities, increases awareness among students about environment and create attitude towards sustainable lifestyle.
TE Prod	311086: Employable skill devt.	Sustainability	Course useful to understand the importance of quality product making. Helpful to make decision which product is quality wise useful for human being &which one may be harmful. Sustainable development and inclusive growth is possible using its knowledge.
BE Prod	411089 A : Human factors in engg. & ergonomics	Social ethics	To make an awareness about number of workers sacrificing their lives in absence of safety devices during manufacturing products. Contents not only focus on improving safety measures but also highlights to reduce



## Amrutvahini College of Engineering, Sangamner

		atmospheric pollution using innovative methods.
--	--	---

### MBA

Core courses	Course Name	cross cutting issue	Description of course
MBA first year	GC-02: Organizational Behaviour	Professional ethics, Moral & ethical values, Gender equality	Course focuses on crosscutting issues such as Human values, conflict management, stress management. Course covers areas like personality, attitude, perception, leadership, group & team dynamics.
MBA second year	401: Managing for Sustainability	Professional ethics, Environmental awareness, Moral & ethical values	Course focuses on crosscutting issues such Environment, Sustainability, and Ethics. Course contains areas such as Corporate Social responsibility, Practice of Sustainable Development, Corporate Governance, Business ethics & values.